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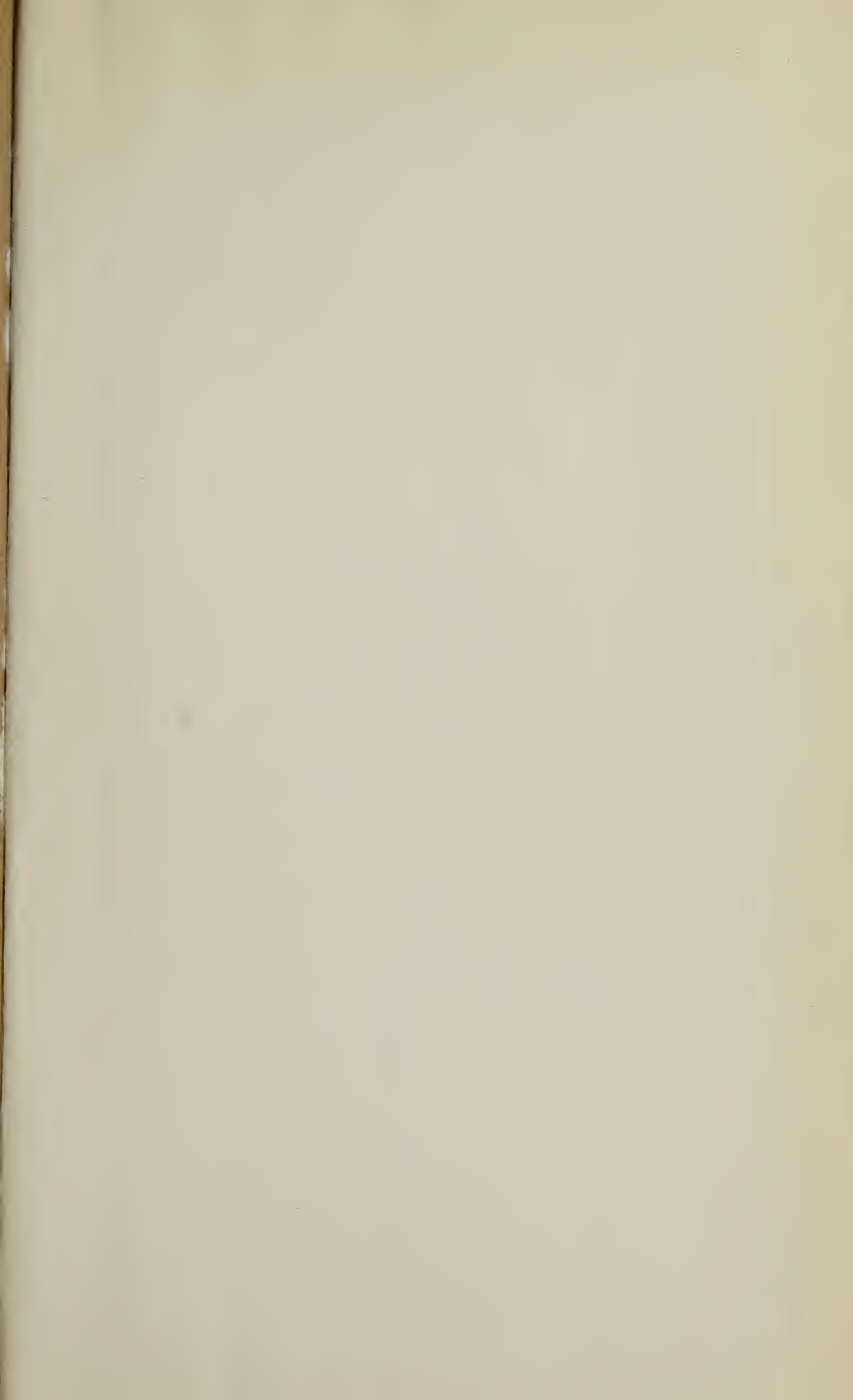
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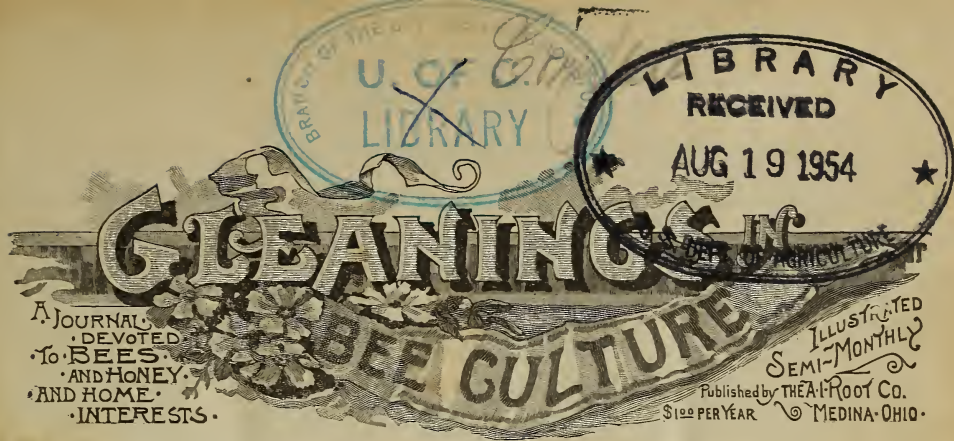
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Vol. XXV.

JAN. 1, 1897.

No. I.



ISN'T FIVE DOLLARS a pretty high price to figure for a swarm of bees without any hive, as H. S. Jones reckons on page 892?

L. A. ASPINWALL measured many queen-cells at the time the egg was laid in them, and in every instance he found the measurement across the mouth of the cell was the same as that of a worker-cell.—*Review*.

SEVENTY TO EIGHTY PER CENT as much comb as extracted is what A. F. Brown says he can produce, and he has produced both kinds by the ton. He thinks more comb honey should be produced in the South.—*American Bee Journal*.

AMERICAN BEE JOURNAL reports the case of a young lady whose hands are poisoned by propolis when scraping sections. Scraping sections produces on my wife something like hay fever.

ELIAS FOX, p. 890, says a swarm with a clipped queen will invariably return to the old hive "unless they are joined by another swarm that has a queen." He might add, as another exception, that they may enter any hive to which a swarm has returned but a short time before.

HASTY says it's to please the dealer that sections less than one pound are worked for, and he thinks the dealer will refuse to be pleased the moment the point is reached where nobody will admit they are pounds. Correct. [Perhaps partly; but the dear bee-keeper has something to do in the matter. See my answer to another Straw on this subject.—Ed.]

I AGREE with Elias Fox, p. 889, that "Nature has forbidden" the bees to make holes in grapes, the only question being how. I think, by making it a physical impossibility; he, that they are abstainers on moral grounds, if I understand him. It's a small matter anyhow. We agree on the main question, that bees don't make holes in grapes, and that's not a small matter.

THE *Northwestern Christian Advocate* interviewed officials of 19 leading railroads as to drinking-employees. In every case, drinking while on duty is absolutely prohibited; and with the majority of roads it is clearly intimated that employees who wish to retain their positions, must refrain from the use of intoxicants when off duty as well.

E. E. HASTY, in *Review*, comes to the support of A. I. Root, and says, "And we'll settle on the banks of the pleasant O-hi-o," is the authentic version. Say, what business have you Ohio fellows to know how we eastern people sang about going west to Ohio? But it may be that when the emigrants from Pennsylvania reached Ohio they couldn't express their feelings without interpolating "pleasant."

A. B. ANTHONY thinks 17 days for development of a queen 35 years ago was all right, but that it has been reduced to 15 now, because, when the old queen leaves with a swarm, the one that matures first kills the rest, so the early-maturing trait has been perpetuated and intensified. But, friend A., if two days have been cut off in 35 years, it must have taken about 35 days for a queen to hatch in the time of Columbus, and I leave you to figure what it must have been in the time of Samson.

SOMNAMBULIST—the one and only—says in *Progressive* that he has private customers not only as far as Texas and Idaho, but as far north as Chicago and as far east as Ohio, and, with a twinkle of defiance, he says something about "next door to the Home of the Honey-bee." Say, Bro. Root, can't we some way combine forces and down that fellow Sommy before he establishes regular agencies at Marengo and Medina? [If he has done it already, we'll establish an agency at his door, to get even. But, where, oh where! is Naptown and where is Dreamland?—Ed.]

FROM OUR the none too full ranks of our lady bee-writers passed away, Nov. 21, Mrs. A. L. Hallenbeck. Judged by her writings, she was a woman of beautiful spirit. [Mrs. A. L. Hallenbeck's picture appears in the group of bee-keepers as they assembled at Lincoln—see No.

6. The manner of her death—being thrown from a wagon during a runaway—was peculiarly sad. Although she had not figured very prominently in the columns of *GLEANINGS*, she had written not a little for some of the other bee-periodicals. I well remember her kindly face and pleasant handshake at the convention.—Ed.]

PROF. COOK says, in *American Bee Journal*, "I think there is every thing to encourage the breeder in bee-keeping. I think that there has been very little real scientific breeding yet practiced. If I am right it is a new field; and a wider, surer success awaits the earnest, conscientious, capable artist in this line of work." [Prof. Cook may be right, but at the same time I can not help feeling that Doolittle, Alley, and the Atchleys have got down pretty near to the scientific methods of queen-rearing.—Ed.]

GRAVENHORST indorses *GLEANINGS'* advice to melt candied honey slowly, and adds: The more slowly the crystals are dissolved by mild heat, the less the honey loses in aroma and color. [I do not know when we gave such advice; but all the same it is good. Our method of liquefying candied honey in square cans is to immerse a number of cans within an inch of their tops in a vat of hot water, the latter being heated by a jet of steam, and turned off. The cans are allowed to stand thus about half a day, when the honey will be brought to a liquid condition. It is unnecessary to state that we remove the caps before liquefying.—Ed.]

"AS REVEALED by an inquiry in the *American Bee Journal*, the importation of *Apis dorsata* by the U. S. Government is favored by such distinguished apiarists as Prof. A. J. Cook, Mrs. L. Harrison, E. France, J. M. Hambaugh, W. G. Larrabee, G. M. Doolittle, and G. W. Demaree."—*American Bee-keeper*. But please add, worthy A. B. K., that Mrs. Harrison wants it for the Seminole Indians, who never keep bees in a hive; that Larrabee says, "Yes, if they would not turn out like the English sparrow;" and that, while Demaree would be glad to have it done, he fears it might fail. Also that, while these 7 more or less favor it, 14 others on the same page oppose it.

HUTCHINSON thinks there may be some progress in bee-keeping, but hardly expects any thing important. Now look here, Hutchy, no one was hunting for or expecting the extractor when it came. How do you know that surprises of that kind are all over? [It is true, no one was hunting for or expecting the extractor when it came. The same may be said of comb foundation. But I want to tell you that I am hunting for and expecting some startling developments in the way of deep cell foundation, or what some might call partially drawn comb, said comb being within the reach of every bee-keeper, and as light per square foot as the thin

foundation. Hip, hip, hur— Well, I guess I won't just yet. Perhaps the whole thing—well, I am not going to say any more.—Ed.]

□ WHICH IS NICER for the table—square or oblong sections? In *American Bee Journal*, 8 say square; 3, oblong; 7, either; 4, to suit the shape of the plate. [I wonder if the eight ever saw an oblong and a square section side by side. So far as I am concerned I should be inclined to agree with the seven. Difference, if there be any, would be a matter of notion or taste. A square section will not remain on the table very long before a slice will be taken off from one side or end, and then it will look oblong. The oblong will probably have a slice taken off from one end, then it will be square. I do not suppose the housewife ever thinks which looks better on a plate—a square or oblong cake.—Ed.]

MR. EDITOR, you are altogether too modest in your statement on p. 890. I think no one in the last 40 years has disputed that it is a common thing for workers to hold young queens in their cells and feed them there. When there's piping and quacking in a hive, lift out the comb and you'll see the quacking queens thrust their tongues through the slit. "Doolittle on Queen-rearing," p. 77, says, "Put a little honey around the end of the cell, so that she can feed herself before coming out of the cell." [I did not mean to be so modest; but I did not wish to be apparently too positive regarding the number of queen-cells that had been observed on one comb. Yes, come to think of it, it is pretty well established that queens are sometimes confined in the cells.—Ed.]

HON. R. L. TAYLOR put on four colonies 452 lbs. of unfinished sections, fed 378 lbs. of honey, and took 680 lbs. finished sections—1.7 lbs. honey for each pound gained.—*Review*. [The results obtained by Mr. Taylor I think are more favorable than the results generally secured by others in feeding back. In some cases I believe it has been reported that it was necessary to give two and even three pounds of honey for every pound of finished comb honey received back. While there is a good deal in knowing how and when to feed back, as a general rule the average bee-keeper had better let the practice alone. He will usually get more money in the end by cutting out his unfinished combs and selling them as chunk honey, and selling the extracted at market price, than to try to set good money chasing after poor.—Ed.]

□ SOME ARGUE that it's all right to sell sections by the piece, there being no deception in the case. Well, then, if it's right for the grocer to sell them that way, why isn't it right for the grocer to buy them that way? Just tell me that, will you? [Say, doctor, what do you want to rake up that old bone of contention for? I won't argue with you, at all. Yes, I

will, just a little bit. You can not get around the fact that bees fill a thin comb quicker, and that the honey is of better quality. Deep cells of honey do not ripen as well.

□The grocer may be a wee bit dishonest, without meaning to be so; but I believe the bee-keeper in many cases finds there is more money in the production of thin combs, outside of any special call for them on the part of the buyers.

Oh, yes! it is all right for the grocer to buy what it is right to sell. We will pull together here. But say, doctor, if you think the thin $4\frac{1}{2}$ sections are in line with the sunken bottles, what objection, outside of the fact that they won't fit your super, would you have to a tall section that would hold as much as your $1\frac{1}{2} \times 4\frac{1}{2} \times 4\frac{1}{2}$, and still be only 7 to the foot thick?—Ed.]



By R. C. Aikin.

Of names there is no end. We have the "Rambles," "The Sunny Southland," "Pigeons by the Way," and others, and now comes "Ridgepole Musings." At first thought you may call this a high-sounding name; yet in choosing it we have no thought of a "loud" or egotistical heading or title. J. H. Martin appropriated for his general heading the title of "Rambler," a very characteristic name. "The Sunny Southland" also was peculiar, and somewhat of an index to the writings, though many subjects were treated. It was suggested to the writer that "The Woolly West" would be a good heading, but to me it seems inappropriate. Geographically we are located near the center of the United States, not in the West. Again, we are well nigh the top of the ridge pole or backbone of the continent—the Rocky Mountains. Since, then, our point of view is both central and elevated we may speak of many things; and in speaking we desire to be guided to the truth, and to say only that which may be right and for the good of all concerned.

ALFALFA.

There is a great amount of misunderstanding in regard to alfalfa; but before we enter upon the discussion of the plant itself, let me speak of some general conditions in the districts where the plant grows.

There is—or seems to be—a prevailing opinion throughout the East, that Colorado and other alfalfa-growing States are a sort of bee-keeper's paradise. I wish to give the fraternity a true conception, if possible, of the facts. Let us begin at the Missouri River and look

over Nebraska and East Colorado to the mountains. Think of the slope of the country from the river westward, beginning at a rise of 6 or 7 feet to the mile; and as you pass on westward the rise increasing until at or near the mountains there is a rise of about 20 to 30 feet to the mile. The average rise between Omaha and Denver is over 9 feet to the mile. The rise is more gradual at first, but quite rapid near the mountains. Now picture in your mind an ordinary rolling country with hills (not bluffs, but a gentle rise from the streams) being from 40 to 100 or more feet high. The slope from the streams may be so gradual as to make a nice farming land and terminate in a tableland, or it may be variegated; but whatever the general characteristics of the face of the country, do not forget that there is a *general* slope, with all streams pointing and flowing rapidly in the one general direction.

Now, a country to successfully irrigate must have the rapidly falling streams and general fall of the face of the country. The ideal place to irrigate would be a country that, in common expression, would be called level, but in fact has sufficient fall to make *good drainage*, the highest points or ridges between streams being low enough that ditches taken from the streams may be carried to the tops of the ridges without having to be many miles in length. Irrigation is accomplished by taking the water from the streams by means of the ditch, with sufficient grade to make the water flow nicely and yet not wash or cut in the channel. Thus the water is brought above (on higher ground) that to be watered, and then carried in smaller ditches and divided and subdivided and spread over the land.

It seems that the general air-currents have an eastward trend. These currents carry moisture, the moisture being caused to precipitate by coming in contact with other or contending cold currents. The combination of heat, cold, moisture, and air-currents brings about our rainfall. Now, the general trend of air-currents being from west to east, they must pass over the Rocky Mountain chain that runs north and south. There is on the mountain-tops intense cold, as at all high elevations, and this cold condenses the moisture in the air, causing it to fall upon the mountain-range and not upon the plain. The air, in crossing the mountain-range, seeks, or is drawn to, the depressions or valleys, carrying more moisture to some parts than others. Reasoning from this you will see that there can not be a full precipitation along the east side of the range; and the higher and more extensive the mountains, the more moisture they catch, and the more dry will be the territory lying east.

Alfalfa is a clover, and a perennial. The other clovers are more or less strictly biennials, and must be continually reseeded if a meadow

is to remain in full growth; but alfalfa differs in the two essential features of lasting for ever, and having a very long thick tap-root that penetrates far in search of moisture. Now, remember that there is a vast territory within the mountains, and east of them, that is subject to drouth because the mountains "catch the moisture" in the high altitudes, and you will see the necessity of a plant that can stand extremes of heat and drouth. Here let me quote from a report of the Kansas State Board of Agriculture as I find it in the *Denver Times Year Book and Almanac* for 1896, page 226:

"Alfalfa is one of the very ancient forage-plants, having been cultivated by Greeks, Romans, and Egyptians in very early times." [Note that irrigation has been practiced in Egypt for ages, being in vogue at the time of Israel's sojourn there]. "In later periods, and especially within the present century, it has been grown by nations in the warmer parts of Europe. It has been known in South America for a long time, and has been cultivated by the people in the arid regions along the west coast. From this region it was carried to Mexico and California, where it has proved a veritable Godsend. Its especial quality is that it can stand a prolonged heat and drouth."

"Ingersoll, of the Nebraska Agricultural Experiment Station, says, 'There is not a crop raised as a farm crop that will pay better returns in cash per acre. Alfalfa, with corn, should be the watchword hereafter in Nebraska.' Alfalfa is a rather slender-growing, branching plant, with leaves much smaller than those of the small June and mammoth red clovers. It is of a peculiar dark, rich green color, and is a marked feature of any landscape where one can obtain an extended view. Like other plants of this class, it has a single strong tap-root, which throws off numerous small branches as it passes downward. It goes to a great depth in search of moisture. Roots have been known to penetrate to a depth of over twenty feet in an open, porous soil. On account of the size and toughness of the root it is not easily broken. For this reason, land selected for alfalfa should be devoted to that crop for a series of years. When broken up, however, the soil is in most excellent condition for wheat, potatoes, or almost any crop. Alfalfa is a nitrogen-producer, and hence improves the land on which it is grown. All clovers, and especially alfalfa, are valuable for the express purpose of renewing the fertility of the soil."

"An Ohio alfalfa-grower, after ten years' experience, says that the land should be copiously irrigated before sowing the seed. This insures prompt and complete germination. This is a point of vital importance, for without a dense and uniform stand of plants it is not possible to make a high quality of alfalfa hay. Another advantage secured by irrigation before seeding

is that it supplies the earth with a reservoir of moisture sufficient to sustain the plants in unchecked and vigorous growth until they are strong enough to bear irrigation without injury. The critical time with alfalfa is the first six weeks of its growth. By soaking the earth before seeding, the plants make vigorous growth until they are ten or twelve inches high, after which they may be irrigated with safety."

"Alfalfa is not safe, as pasture, for either cattle or sheep. This matter has been thoroughly tested until it is admitted that the only safe way is to keep herds out of alfalfa-fields entirely. It is true, however, that both cattle and sheep will sometimes feed on alfalfa pasture for days without ill results. But sooner or later trouble arises. Under certain conditions sheep become inflated like balloons, and die suddenly from eating moist alfalfa. The same Ohio farmer says that horses and swine can be pastured on alfalfa with entire safety, and with profitable results."

It appears, then, that alfalfa is almost a necessity in this arid or semi-arid country, because it is the only forage-plant that can cope with and endure the adverse conditions of climate. It is a splendid crop for hay, both to fatten and to produce milk. For horses that are laboring it is a little too "washy," so that intended for *horse hay* is allowed to mature and become rather woody, being cut at about full bloom; but if wanted for cow feed it is cut before blooming or just as it has fairly begun to bloom. It is rather heavy in growth, being between red and sweet clovers, so if allowed to reach a mature state the stems become quite woody. Horses will eat the woody stems quite freely, but not so freely as mules; but cows will not eat the hard stems unless driven by hunger, so for cow feed it becomes necessary to cut early. For a rather soft fat, and for milk and butter, alfalfa hay is a very fine seed; but to pasture cattle and sheep it seems to be a failure because of bloating. It is *very risky* to turn cattle upon alfalfa.

Now as to the extent to which this plant is cultivated. Observe that there is a vast territory between the mountains and the Missouri River. It is out of the question to think of growing alfalfa or any thing else near the mountains except on the bottom lands, and little there unless irrigated. I have been told that there is quite a little grown in the vicinity of Garden City, Kansas, without irrigation; but it is on bottom land that is all underlaid with water but a few feet below the surface.

The rainfall increases as we get away from the mountains, being more or less in certain districts, owing to height and extent of mountains and distance north or south, until there is sufficient to produce crops with the rainfall alone. East Colorado and West Kansas and Nebraska, to near the center of these States,

are and will be subject to drouth in greater or less degree, as the seasons are generally more or less dry, but always drouthy.

It is evident, then, that the growing of alfalfa (or any thing) can not succeed in Colorado, and only to a very limited extent in West Kansas and Nebraska, except where watered. The streams are *utterly inadequate* to supply the water necessary to cover this whole area, even if all that flows throughout the year be used; and when we remember that the greatest water-supply often comes before it is needed or can be used, you will at once see that *only a very small portion* of the country can be set to alfalfa.

Let me here repeat what I have heretofore written of the alfalfa districts in Colorado (or elsewhere in the mountain districts), that the places where bees will do well on alfalfa pasturage are as garden-spots or dooryards in comparison with the *vastness of the country in which they are found*. The irrigated districts are confined almost exclusively to the valleys. True, water is carried in ditches for 5, 10, 20, and even 50 to 75 miles or more. Many ditches are made 10 to 20 feet wide on the bottom, and carry a depth of 3 to 6 feet.

Continued.

RAILROADS AND COMB HONEY.

COMMISSION MEN AND THE HONEY-PRODUCER;
BOTH SIDES FAIRLY SET FORTH.

By C. F. Muth.

This would be a nice world of ours if everybody knew what he was about and would govern himself accordingly. As it is, we have got to have a certain amount of patience with our neighbors and friends, who, no doubt, have to reciprocate, occasionally, for our shortcomings. By my correspondence with some of our freight agents I am reminded that the discussion of the subject of comb honey might be of some use to a number of our friends. Most shipping-cases received by us this season were almost perfection; i. e., they were neat, showed the honey to advantage, and the inside space was such that there was about $\frac{1}{8}$ to $\frac{1}{4}$ inch space between the sections and the walls of the case. Put up in such manner the comb honey is apt to arrive safely if the railroad employees, while loading and unloading, would handle the cases as they would eggs. It is a notorious fact that comb honey is damaged while being loaded on the cars or while it is unloaded on its arrival. If those baggage-smashers would set down those cases instead of throwing or dropping them, much loss and annoying correspondence would be saved to shippers and dealers, and relations between consignees and railroad companies would be more pleasant. Unless there is a collision, or cases are upset or flung about, combs hardly ever break while in transit; and they

do not break if hauled in a wagon over a rough pavement. Cincinnati has no rough pavement. I have this morning the assurance of Gen. A. H. McLeod, the General Freight Agent of the C. H. & D. R. R., that all of their employees will be instructed to handle comb honey the same as they would eggs. We are now corresponding with the agent of the Big Four, and will do the same with others as soon as occasion offers. It should be your point, and it should be one of the duties of the officers of our bee-keepers' meetings, to see that every railroad employee receive similar instructions from headquarters.

We received a shipment of comb honey this season, for the damages to which the railroad companies could not be censured. All the cases were smeary on arrival. Not showing much breakage, however, they were washed off and placed in the store. Each case had honey oozing out at the bottom-board, and on each additional day the pool of honey on the floor, under each row, was getting larger. The cases held twelve $4\frac{1}{4}$ sections, two sections in front row, behind the glass. They were too short and too narrow. The combs were pressed together so that the faces of most of them were bruised. They were not quite $3\frac{1}{2}$ inches wide, so that the faces of the combs were bruised by pressing in the two sections. I am sorry for the poorly posted bee-keeper putting up his nice white-clover honey in such poor shape.

We are selling most of these nice combs without the sections, put up in butter-crocks and tin buckets. These cases were overhauled twice; but, who will buy a leaky case of comb honey? and leak they would. We have now placed all the good combs in new cases, and feel confident that they will sell in their present shape.

I feel sometimes disgusted on hearing so much of the dishonest honey-dealer and the city adulterators, although those parties are not at home in Cincinnati. I believe that the business is overdone in both directions. I don't remember the time when I have seen adulterated honey, and the public believes that most of the extracted honey is adulterated, because they see it so stated in the papers. It's not all "good sense" the friends of the bee-keeper bring to bear upon the public.

It is impossible for me to believe that the honey-dealer is on a lower level than the bee-keeper. I can believe it no more than that the business man in the city should be more dishonest than the farmer in the country. But there are scoundrels in all classes of society and callings. Let us keep away from them, and post our friends how to put up their honey in safe and merchantable shape, and let us lose no time in impressing upon railroad companies the idea that our comb honey needs the same care as eggs. They will accommodate us if in their power. These are the first steps necessary for

a pleasant relationship between bee-keeper and honey-dealer. The next step is to keep away from scallawags, no difference whether they live in cities or in the country.

Cincinnati, O., Dec. 16.

[I am sure our readers will peruse this article with interest, coming as it does from a leading honey-buyer as well as bee-keeper. Friend Muth will perhaps remember that I have more than once taken up the defense of the commission man, and condemned at the same time the slipshod methods of the honey-producer. For instance, I would call attention to page 183, March 1st of our volume for last year. While it is no doubt true that bee-papers have of late put more emphasis on the dishonest practices of some "scallawag" commission houses (and there has surely been reason for it), I do not believe that any of them have felt that the producing class were as perfect as they might be.

Bee-keepers need to have brought to their attention over and over again the folly of putting first-class comb honey in ill fitting or miserably concocted shipping-cases, home-made, to save expense. The modern factory-made cases are almost perfect, and can be bought for less money than the usual home-made good-for-nothing worse-than-nothing substitutes.

Mr. Muth makes a good point in regard to having freight-handlers instructed by the managers of the railroad companies. I trust that commission men all over the country will take the matter up. Here indeed is something for the new Union to undertake.

Friend Muth expresses a doubt as to whether there is any such thing as adulteration of extracted honey. I do not know much about Cincinnati; but I do know, without any guesswork, that there is plenty of that kind of work going on in New York and Chicago, and I do know that our silence all along for several years has given honey-mixers altogether too much license.—Ed.]

THE AMALGAMATION PROJECT.

By Thomas G. Newman.

In reply to Dr. Mason's article in GLEANINGS, pp. 855-7, I desire to say that, being invited to "make suggestions" or criticise the Constitution offered as a basis of amalgamation I candidly pointed out some of its imperfections, without allusion to any person, supposing that was what was being desired; but by the rejoinder of Dr. Mason, and the editorial remarks, it seems that an unpleasant personal controversy is invited. As I have no relish for such, and shall not indulge in it, I silently pass all that has been said. "Measures, not men," is my motto.

While I have no desire to dictate any thing, I certainly have the right to *criticise* such an important matter as submitting an imperfect constitution to vote. The members of the Union have the right to expect this of me, and I shall not disappoint them. In my criticism I have nothing to change, though I might add much more to it. The points I made are mainly incontrovertible. It is nonsense to state that

I made any *decision* in the matter of submitting amalgamation to vote; that was the duty of the Advisory Board, to which I immediately submitted the question, Dr. Mason's assertion to the contrary notwithstanding.

It is a fact that I gave an "*opinion*" publicly, that such an incomplete and imperfect document should be amended before being adopted by the Union, because of the difficulty and delay in amending it afterward. Have I no right to express an opinion? If not, since when?

The unkind personal remarks threatening my defeat at the next election are ungenerous and unwarranted. I never was a candidate for election or re-election. The members voted for me because they wanted my services; and when they want some one else, I shall retire with the satisfaction of having done my duty to the best of my ability. I hope my successor will do the same.

There are seven members in the Advisory Board; three favor submitting amalgamation to vote; three vote against it, and one, after adding many more criticisms than I made, adds: "Many will want to have it put to vote. I should say, submit the criticisms to each voter, and put it to vote." That decides the matter. Amalgamation will be put to vote at the next election.

If the inconsistencies I have carefully pointed out are to be disregarded, and ascribed to my "vivid imagination"—then the consequences must not be charged to me. I have carefully watched the interests of the members of the National Bee-keepers' Union for a dozen years, and successfully defended their rights in the courts of the land—from the police court to the very highest tribunal of the country. My aim is the same to-day, by trying to prevent the serious mistake of too hasty and premature action, and thereby avoid the embarrassment which would naturally result therefrom.

[Neither Dr. Mason nor your humble servant had any desire to invite an unpleasant personal controversy. "Measures, not men," was also our motto; but when the man who had the measure in hand proposed to blockade it, then we protested. It may be true that Mr. Newman had no *desire* to dictate any thing; but when he said there was "nothing left for its advocates now to do but to await the action of the convention next year"—well, it *looked* like "a decision."

It is all right for him to give an opinion publicly; but what I criticised particularly was giving that "opinion" *too late* for action at the Lincoln convention. If he had not apparently desired to blockade amalgamation he could very easily have laid his "opinion" on the merits of the proposed constitution before the Lincoln convention; for, as I have already pointed out, practically the same document was published three weeks before that meeting.

I have been very sorry that it seemed necessary to criticise Mr. Newman's course in this whole matter, but I have believed it to be my duty.—Ed.]



MEMBERS OF THE LINCOLN CONVENTION ON THE STEPS OF ONE OF THE COLLEGE BUILDINGS. (SEE EDITORIALS.)

WOOD VS. WIRE.

WOOD STAYS NOT SATISFACTORY IN BROOD-COMBS.

By R. M. Reynolds.

When bee-keepers, a number of years ago, began to use full-sized sheets of foundation in brood-frames they learned that fastening such sheets to the top-bar only was not a real good plan. The foundation, during the manipulations of the bees in the process of building out into comb, was pretty certain to stretch and take on undesirable kinks, twists, and bulges—breaking down sometimes and making a bad muss. To prevent the foundation from stretching and sagging, various devices have been tried; but I believe that wire in the frames has proven, in time, the most efficient, practical, and satisfactory. I have found three perpendicular wires sufficient for a Langstroth frame, if the sheet of foundation is fastened securely to top and ends of the frame. The small tinued wires do not interfere at all with brood-rearing; and while three wires properly spaced will hold the foundation in line and secure nice straight combs, a greater number of wires will obviate the necessity of fastening the foundation to the ends of the frame, and will also enable the combs to stand rougher handling without damage.

The small tinued wires are preferable to larger wires, for the reason that they can be stretched tight without springing the thin bottom-bars of frames much out of line. Now, while wires are to be preferred for brood-frames, wood stays do very well for frames which are to be used exclusively for the extractor. The wood stays which I have used were sawed $\frac{3}{8}$ square. Holes were drilled in top and bottom bars with a $\frac{1}{8}$ bit, and the stays pushed up through the bottom-bars, and nailed in both top and bottom bars of frames. Three of these perpendicular wood-stays were used in frames the length of the Langstroth; and about 300 such frames which have been in use during the last 15 years have proven entirely satisfactory. When wood stays are put in and nailed, the thin bottom-bars are held perfectly straight and true; and after the comb is built down and attached to the bottom-bars there is little or no danger of the comb filled with honey bulging out of place if the frame should be turned over sidewise.

But wood stays, with me, have proven entirely and invariably *unsatisfactory* when used in brood-frames. The trouble seems to be that my bees entertain decided views on the matter. If a frame of foundation with wood stays were placed in the brood-chamber when honey was plentiful, the foundation would probably be built out into a nice even comb; but so soon as the bees were at leisure they were pretty certain to cut more or less of the comb away from

the wood stays and then cut away more or less of the wood stays. Of probably 50 frames of that kind which I tried as an experiment, I think that not one comb remained in good condition in two years. Better not invest in a large number of wood stays for the brood-chamber until you consult your bees and learn their views on the matter.

East Springfield, O.

BEE-KEEPING IN SOUTH AFRICA.

60-CENT COMB HONEY DROPPING TO 36 CTS.
AN INTERESTING LETTER IN REGARD TO
HIGH-PRICED HONEY IN AFRICA.

By François J. Haarhoff.

Some time ago I sent you a short article on bee-keeping in South Africa, in which I stated that we sell honey here at 60 cents per 1-lb. section. Although I spoke the truth at the time, I am sorry now that I did it, as I am afraid I have unwittingly given a wrong impression, as appears from some half-dozen letters which I have since received from your country inquiring for particulars and prospects of success for intending immigrant bee-farmers.

The case is this way: Last season the competition was between myself and one or two other small bee-keepers who did not own fifty colonies between us; consequently there was no fear of a glutted market. And, moreover, honey in sections was something new to most people, and was bought by many as a curiosity, or as something to be looked at for its beauty rather than tasted for its sweets. This season several new competitors have already appeared in the field; and, our market being limited to Pretoria and Johannesburg, the result is that the price of 1-lb. sections took a straight drop from 60 cents to 36; and I expect before the season is over to see it down to 24 cts. or under; and any oversupply would soon make the article a drug in the market. Then, again, for the information of intending immigrants I must state that the cost of production is abnormally high, as every article used in the industry is imported from America. I may state that every hive, section, or sheet of foundation, or any thing else I use in my small apiary, has been ordered for me by Messrs. T. W. Beckett & Co., from the A. I. Root Co.

Then, again, as to pasture. We have a long summer and short winter. But it must be borne in mind that nature supplies little or no pasture for bees, as our pastures are all pure grass—no clover, basswood, or honey-producing wild flowers, all our honey being mostly obtained from cultivated gardens, thus precluding the bee-farmer from keeping too many colonies. The only honey-producing wild flowers are a variety of milk-bush, which grows only on old and deserted land or gardens. These are being fast exterminated.

I have written this lengthy letter to correct any mistaken impression I may have created. Pretoria is not all roses. There are many thorns.

Pretoria, South African Republic.

ANCIENT LEGENDS REGARDING BEES.

ABILITY OF BEES TO DISTINGUISH BETWEEN
GENUINE AND ARTIFICIAL FLOWERS;
AN INTERESTING ARTICLE.

By T. S. Ford.

In the Sunday-school quarterly sent out by the M. E. Church South, and in Peloubet's notes on the International Sunday-school Lessons for 1896, an example is quoted to illustrate the wisdom of Solomon, as follows: "When the queen of Sheba placed two wreaths before the monarch, and asked him to tell which was real and which was artificial, he opened a window; and a bee alighting upon the natural wreath told him what he wished to know." Peloubet quotes this story from Geikie and Farrar, and Stanley's History of the Jewish Church. It is supposed that these authors got the story from some rabbinical compilation, and it really shows how easy it is to get away from the open book of nature. A Greek historian would never have invented such a story; and if he had found it he would have rejected it at once. The truth is, if Solomon was the close observer that he must have been he would never have permitted an appeal from the verdict of his own senses to those of an insect.

The writer was sitting one day last summer by an open window. A hand-painted fire-screen of enameled cloth hid the fireplace, and upon it was painted in water-colors, upon a dark background, some water-lilies rather clumsily executed, and some passion-flowers (May-pops) which were quite life-like. The whole vine was shown with flowers and fruit hanging. An enormous bumble-bee came buzzing in at the window, and made straight for the painted flower, and clung to it, extending his tongue in a frantic endeavor to get at the supposed nectar. He persisted in his efforts for at least twenty seconds—long enough to call the attention of other members of the family to the scene. Finally he gave it up, and flew straight out of the window, apparently without ever realizing how he had been cheated.

In a contest between two ancient Greek painters, as related in Rollin's Ancient History, grapes were painted so naturally that the birds came and pecked at them; and another great artist painted a mare so artfully as to cause a horse, when led up to it, to whinner. Now, the senses of a bird or animal, reinforced as they are by a higher degree of intelligence, were thus cheated.

In the crest of the king-bird or bee-martin are hidden, under a dark exterior, a cluster of

scarlet feathers which show beautifully when the crest is erected. The current belief among our common people is that this semblance of a scarlet flower on the top of a bee-bird's head attracts the unwary bee to the jaws of the hungry bird; and I have myself seen bees swerve from their line of flight and circle round the sitting bird until snapped up.

It is said that Solomon "spake of trees, from the cedar-tree that is in Lebanon, even unto the hyssop that springeth out of the wall; he spake also of beasts and of fowl, and of creeping things" (insects) "and of fishes." In other words, this great man, who probably had no access to works on entomology and natural history, as do we, was a close observer of all the phenomena of animal and insect life, as he saw them. To say that such a man, gifted above all men who lived before or since in all the faculties of observation as well as reasoning, and therefore a closer observer than Darwin himself, should have been so silly as not to know that any gay color, having the semblance of a flower, will attract a bee, is a striking illustration of why it was that He of whom he himself said, "A greater than Solomon is here," treated with contempt "the tradition of the elders." This story of Solomon's artifice of using the bee to aid him in detecting the artificial from the natural flowers is evidently one of the monkish inventions of the ancient Jewish rabbis, living as far from the real truths of nature as they did from the truth of the Spirit, and who erected a hideous system of ethics, false to the real teachings of the Angel of the Covenant.

The rabbi who, in ancient times, coined the false story of Solomon and the honey-bee, thereby imputing to the insect more acute power of observation than the wisest of men, found his counterpart in a Methodist bishop whom the writer heard in the pulpit on a great occasion, enlarging upon the wonderful faculties which the Creator had bestowed upon the honey-bee. He said the senses of the insect were so acute, and that they were always so sensitive to the approach of rain, that the last individual of the busy hive was always safely housed before the storm began. The idea clothed in his beautiful language (which I can not undertake to quote) was very impressive; but, as every bee-keeper knows, he was far from the truth. Last summer a thunderstorm came up in the middle of the day. There was a furious wind accompanying the first dash of rain; and while probably the great majority of the busy workers reached the hive before the bursting of the tempest, thousands were seen so buffeted by the wind and rain that they took refuge in the shrubbery, many yards from the hives. The writer thinks that the Jewish legends of the several incidents attending the visit of the Sabæan queen are squarely on a

level with the Arabian stories of his dealings with the genii, and that neither is worthy of quotation in the Christian's study of the Scriptures.

Columbia, Miss., Nov. 29.

[When I saw that item in Peloubet's Notes regarding the manner in which Solomon is said to have distinguished between the real and artificial wreath, I said to myself, "The story is very pretty but improbable." A number of the other things that the queen of Sheba is said to have placed before king Solomon, while ingenious are equally improbable. I am surprised that Dr. Peloubet places so many such things in his "Notes," that are studied and admired by Sunday-school workers everywhere. It is this same Dr. Peloubet who, by way of illustration, spoke of the skill of man in manufacturing honey-comb, filling it with glucose, and capping it over with appropriate machinery. The illustration itself, I remember, was very appropriate, but the thing itself very wide of the truth. . . .

I never supposed myself that it was possible to fool even a bumble-bee with artificial flowers, much less those that are painted.

I have seen bees follow bee martins and king-birds in their flight through the apiary; and I have seen them circle around the birds after they had alighted; but I always supposed this was owing solely to the fact that they were enraged by seeing a swiftly moving object among them. You know it is a great deal safer to walk through an apiary quietly than to run through. One of the first things I ever learned in bee-keeping, in my early boyhood days, was that, if I ran through the apiary to escape the bees, I was more apt to be stung than if I walked through quietly.—ED.]

EXPERIMENTS IN FEEDING BEES.†

HOW TO FEED IN THE BOTTOM-BOARDS.

By F. A. Snell.

During my 36 years of bee-keeping in this State I have tried many different ways of doing it. I first kept my bees in box hives, and those short of stores were put in the cellar during winter. The hives were inverted, and the bees were fed by placing combs of honey over the tops of the brood-combs, with food enough to carry them through till spring, as advised in Quinby's *Mysteries of Bee-keeping*.

Later I transferred all my bees into movable-comb hives. A few being short of stores the first year, I placed them in the cellar, and two or three were fed on sorghum molasses as advised by some writer. These all died before spring, as well they might have done. The rest were fed on granulated-sugar candy to supplement their stores. These came out in the spring in very good shape. Good seasons followed, and I quit trying rapid increase, and my bees were well supplied with food for winter. I was quick to adopt the honey-extractor when it came before bee-keepers, and ran a part of my bees for extracted honey. Then the honey was taken from the brood-chamber. During the early bloom I kept the combs emptied of honey by its removal once a week.

After the early bloom a drouth set in, and the fall bloom was almost a failure, and, as a result, my bees were short of stores for winter, and I was forced to feed, and tried various ways of doing it. I tried shallow dishes filled with honey. Sticks were laid across to keep the bees from drowning; deeper vessels were tried, also cans filled with honey inverted over plates, and slightly raised, and held in place by small sticks which held the can in place, allowing the feed to flow over the plates from which it was taken by the bees, and stored in their combs. These feeders were all placed over the brood frames, and the heat from the bees retained so far as possible by covering the feeders with pieces of carpets. Later on I experimented with other methods of feeding—not from necessity, but to gain knowledge.

At a meeting of the old Northwestern Beekeepers' Association held at Decatur, this State, in October, 1869, I learned from that veteran bee-keeper, James M. Marvin, his method of feeding. To feed he simply raised the fronts of the hives two or three inches higher than was the rear, and poured the feed in at the entrance, giving about two or three quarts of feed at a time, and doing so just at night, so no robbing would occur; and by morning the feed would be all stored in the brood-combs. This was new to me, and was tried by me at the first opportunity. I found it worked well. The honey or syrup was fed warm, and should be made a little thinner than honey. Fed thus, no bees were drowned. The object was to give the bees a good supply of food for winter, and to do so in as short a time as possible; hence the feeding was done each evening until all had enough to carry them through to spring. This way of feeding for winter is very little trouble. No extra fixings had to be made, and later to take up valuable room. From time to time since, this method has been mentioned in our bee-journals. It is old, but none the less valuable; and where bees have been drowned by so feeding, I believe it was from the feed being given cold and too thick. It should by all means be quite warm, and thinner than ripened honey when given. Very likely those veterans, M. M. Baldrige and R. R. Murphy, fed their bees in this way away back in the sixties. I wish we might hear from them often through our bee-journals.

When entrance feeding is practiced, care should be taken that, in case of rain, no water can enter the hive. The hives must be sealed fast to the bottoms, so no food can leak out and be lost, and induce robbing, perhaps. Late years I have had no occasion to feed for winter, but have experimented during spring with a view to increase brood-rearing or to learn whether such feeding was advisable. I have tried entrance feeders; and for inside, Hill's, Root's, sack, pepper-box, etc., and one of my

own get-up. I now prefer the J. A. Golden. I am now confident that early spring feeding to try to encourage brood-rearing is no benefit, but detrimental. If such is of value at any time, I think it is between fruit and white-clover bloom; but I do not know. So far as my experience goes, after all this time I believe that, if the brood-chamber is kept well supplied with honey in the brood-combs, other supplies given as by feeders are of no use. I shall continue to experiment along this line on a small scale in the future, as I have done in the past, and hope to gain more light by so doing.

Milledgeville, Ill.

BISULPHIDE OF CARBON.

HAS ITS VALUE AS A MOTH-KILLER BEEN OVER-ESTIMATED? ITS BAD EFFECTS ON COMB HONEY; AN IMPORTANT AND VALUABLE ARTICLE.

By C. Davenport.

In reading the report of the last convention proceedings of the North American Bee-keepers' Association I notice that bisulphide of carbon is mentioned as a means of killing moths in comb honey. I should like to say a few words about this; for I believe that, if it ever comes into general use for this purpose, it will do more to injure bee-keepers than adulteration ever has or ever will, for adulteration affects extracted honey only. While I believe comb honey represents the largest interests, I do not wish it to be understood that I am not aware of the great harm adulteration has done and is doing to the producers of honey. I most heartily approve of what the members of the association at the last meeting said against and are trying to do to remedy the evil.

As a means of killing moths in comb honey I have experimented with a good many kinds of drugs. While there are a number of kinds that will kill the moths under the right conditions, all that I have tried as yet, which were effective, injured the flavor of the honey, and bisulphide of carbon did so the worst of all. It also has the peculiar property of making it thinner—not only what is in unsealed cells next to the edge, but that which is sealed as well.

Sections of honey that are so well cured that the honey in unsealed cells can not be shaken out by hand will, soon after treatment with bisulphide of carbon, run or drip quite readily from unsealed cells if the sections are turned over on their sides; and the honey in some that I kept a number of months after treatment did not get thick again. But it should be understood that the treatment was very thorough, as it has to be in order to kill the moths. I hardly think any room could be made tight enough for this purpose unless it is one well plastered, and strips of paper pasted over all the cracks

around doors and windows; and the floor would have to be especially good, for the gas or fumes from this stuff try to go down instead of up. I tried it first in a room which I thought was nearly air tight; but after eight hours, moths in some old pieces of comb which had been placed in the room were as lively as ever. In this case the drug was placed in a large open dish about seven inches in diameter, and it was not all evaporated when the room was opened. I then took a good sound bee-hive, nailed on a tight bottom, and poured melted beeswax around all cracks; in fact, I coated it all over inside with wax, as I did the cover, which was one that fitted very tight. Along the top edges of the hive, on which the cover would rest, strips of rubber were nailed so that, when the cover was on and heavily weighted down, this box was, I believe, perfectly air-tight; and I found that in this box it took about $3\frac{1}{2}$ or 4 hours to kill moths that were well protected by the comb and their web. Those I took from the comb and placed in an open glass would die in about $1\frac{1}{2}$ to 2 hours.

In order to kill moths in comb honey it would, of course, have to be left as long as it took to kill those protected by their web and the comb. Moths are much harder to kill in this manner than some things that are larger. A mouse in a trap was put in this box, and at the end of 20 minutes the cover was removed and the mouse was dead. It took but a few minutes to kill a toad and a gopher.

In killing moths with the fumes of sulphur it is much easier to kill the small ones. With bisulphide of carbon the big ones seem to die fully as soon as the small ones.

Moths are very bad here during warm weather. Some one said that, with Italian bees, if the honey were taken directly from the hives and put in a room tight enough so that a moth-miller could not enter, the honey would not be troubled by moths. But I am sorry to say that, in this locality, honey directly from the hives of Italian bees put in such a room, if the room is above ground, and kept as warm as it should be, would often be nearly destroyed by moths if it were not sulphured every twelve days or so for a while during warm weather.

I should like some better method of killing moths than sulphur, but I do not believe it is to be found in bisulphide of carbon; for, to say nothing about its injuring the honey, it is fully as much (if not more) work to use it. It costs more, and, besides, it is a poisonous and dangerous drug to handle.

Southern Minnesota, Dec. 1.

[I am glad that Mr. Davenport has sounded a note of warning in time, for of late bee-keepers have been looking toward bisulphide of carbon as the best solution of the moth evil in comb honey; but if the remedy is as bad as or worse than the disease itself, then it is high time we called at least a temporary halt. It is no doubt true that other bee-keepers who have

tested bisulphide of carbon are in a position to prove or disprove Mr. Davenport's statements; but we have learned by experience that he is one of those careful, thoughtful, painstaking bee-keepers whose opinions should be regarded as having considerable weight.

Prior to the use of bisulphide of carbon, sulphur or brimstone had been used, and no bad results, I believe, have ever followed, except in cases where too great a smudge was made—much more than was necessary. It is then that a yellow deposit will be found on the sections and the surface of the honey. This is no real detriment to the flavor of the honey, but it does affect quite materially its appearance for the market, and that is a real damage.—ED.]

THAT RAPID BEE-ESCAPE.

By C. H. Dibbern.

I think a little explanation is necessary in regard to the escape described in GLEANINGS of Nov. 15. Up to the time I wrote the article I had experimented with various designs, on the lines indicated, with some very gratifying results; but as the past few seasons have been practical failures I had little chance to put it to actual test. When I read about the multiple-exit escape my thoughts reverted to my experiments with this pattern, and I again made some trials, the results of which seemed to warrant the article I sent you. Since then, however, I have taken off a good many full cases of comb honey, and the design as published has proven a disappointment.

The Porters are entirely right in claiming that bees must first have a strong desire to leave the supers before they will do so. It seems that, in the board described, there was too much connection with the hive; and while, sometimes, it works very well, at other times it has failed entirely. Then, too, I found that, with only two exits, it worked all right, and I am not sure but one exit would be better yet. Then, too, I found that four or five lines of obstructions across the board are better, and it can be greatly simplified. I now use a piece of perforated tin $\frac{3}{4}$ in. wide, and as long as the board is wide. Get your tinner to turn up $\frac{3}{4}$ square, and with a common jack-knife cut the tin so you can bend little openings for the bees to pass through outward. Nail four or five of these strips across the board, with the openings fronting to the exits. Nothing more is necessary.

For extracting purposes I believe this plan of getting rid of the bees rapidly offers great possibilities. If a tin slide is arranged to cut the bees off from the hive entirely for fifteen or twenty minutes it will greatly hasten the bees in leaving. This slide can be put over the lower holes, and there will be no danger of smothering the bees, as they can get plenty of air through the perforated strip at lower end of board. It is not intended to nail upper and lower boards together, but can be used for hive

or case-covers by covering the holes till wanted as bee-escapes.

The Porter escape is a very ingenious little invention, and I think the main reason of its success is the fact that it leaves but a very small connection between hive and super. I have produced several escapes that work just as certainly and quickly as the spring escape; but it has been my ambition to produce an escape that will work more rapidly, and with less danger to the bees, and I believe I am in a fair way to accomplish it. If some one else (as the Porters did my original plan) takes up my ideas, and by more ingenuity succeeds, well and good. Bee-keepers will be the gainers as they now are in the Porter escape. Another year I shall experiment further, and make competitive tests, and perhaps in due time have something further to say in GLEANINGS.

Milan, Ill.



YELLOW-JACKETS, MICE, ETC.

A correspondent from the South propounds a few questions relative to the apiary, which I will answer under the headings below.

YELLOW-JACKETS.

He says he has recently discovered yellow-jackets in some of his hives, evidently stealing honey. He thinks the bees have killed some of the jackets, but is not sure the jackets do not kill some of the bees, and asks if there is any remedy.

If the correspondent has really seen yellow-jackets on the combs, among the bees, eating honey, when the bees were in a normal condition, he has seen something I never saw. Yellow-jackets are very fond of honey; and when it is exposed, by opening hives, etc., they will dive on to the combs and eat it ravenously; but so far as I have been able to discover, when the hives are not molested by the bee-keeper, the bees do not allow them to go on the combs of honey. They annoy the bees to a certain extent; but bees, here at the North, seem to be equal to repelling all attacks from them, so that the apiarist pays little or no attention to them. If they really do enter the hives, as the language of the correspondent would denote, or kill many bees, so that a remedy should be sought, I would suggest destroying their nests or killing them with poisoned honey. If the latter is used it should be kept in a dish covered with wire cloth, the mesh of which will admit the jackets but exclude the bees, else the bees would get poisoned as well as the jackets.

MICE.

He next asks: "Do mice ever trouble bees? If so, what is the best way to get rid of them?"

Here at the North mice are often troublesome to the apiarist in winter, inasmuch as they disturb the bees by their constant motion, and gnaw holes in the combs, where left unprotected by the bees, the cluster of which is contracted to the smallest proportions to withstand our cold weather. Mice never trouble when the bees are in the active state, for the bees sting them to death very quickly, and for this reason I should not think they would trouble in the far South, for bees can fly there the most of the time, I suppose. Our remedy here is to trap them in our bee-cellars and fix entrances of metal to the hives which are wintered outdoors, so small that the mice can not get in, while the bees readily pass through. Tin and sheet iron are the materials generally used for this purpose.

SIZE OF SECTIONS.

Again, he wants to know what size of honey-frame is best where it is desirable to sell comb honey. By which is meant, I suppose, what are termed "section boxes." If he means what size of frame is best to use while working for comb honey, then I would answer, the Langstroth, for the South. But the question (though not quite plain) evidently means sections, by the term "honey-frame," so I will answer on that supposition.

There are, in quite general use, sections varying in size from half a pound to two pounds, when filled with honey. Each size has its advocates, but probably there are two to one of what are termed the $4\frac{1}{4} \times 4\frac{1}{4}$ sections (which hold about a pound of honey), when taking all sizes of sections into consideration. This section was mainly 2 in. wide when first brought before the public, but lately many use them of less width, or thickness. This section was made of this size because 8 of them would just fill the Langstroth frame. My own preference is a section $3\frac{1}{2} \times 5\frac{3}{8} \times 1\frac{1}{2}$ in., this holding a pound as nearly as may be when well filled. This size is used in single-tier wide frames with separators, so as to secure each comb built perfectly in the box. My reasons for preferring them are, that more in number can be set over a given space than can those of less depth; besides, such a cake of honey is of symmetrical proportions, and pleasing to the eye, it being just sufficient to set on the table for an ordinary family, and, covering more surface, apparently, to look at, does not give a scrimped appearance or pattern. Why I prefer them to the larger size is that they bring from two to three cents per pound more in market. If it is desired not to use separators, a thinner section can be used. The advocates of no separators use seven or eight sections to the foot, of the $4\frac{1}{4} \times 4\frac{1}{4}$. However, the non-separator plan, as a rule, does not give as nice and uniform combs as does the other. For this reason many grocers object to "non-separated" honey, as the combs get more

or less injured in transit, so that daubing and leaking on counters, etc., is the result.

LOSS OF QUEEN.

Lastly he asks: "In case the colony should lose the queen, what would be the result? I find some empty cells in some of my hives, and thought perhaps the queen had died."

If a queen is lost, or dies, when there are eggs or larvæ in the hive, the bees have the means at hand for the rearing of another; for by feeding any worker larva, under four days old, royal jelly, and enlarging the cell, it is changed from a worker into a queen. A colony in this condition is not called "queenless," but yet it is without a "laying queen." By the time this young queen hatches, all of the eggs and larvæ have passed into the pupa state, when it is impossible for the bees to rear another, should this young queen become lost before she gets to laying, in which case the colony would be hopelessly queenless, and must perish with the death of the bees by old age, unless assisted by the apiarist in giving them a queen or larva from which to rear another. The finding of empty cells does not indicate queenlessness, for there are more or less empty cells in the hive at all times, and during fall and winter little or no brood is found. If during the busy season of the year, no brood of any kind is found, the colony may, as a rule, be considered queenless.

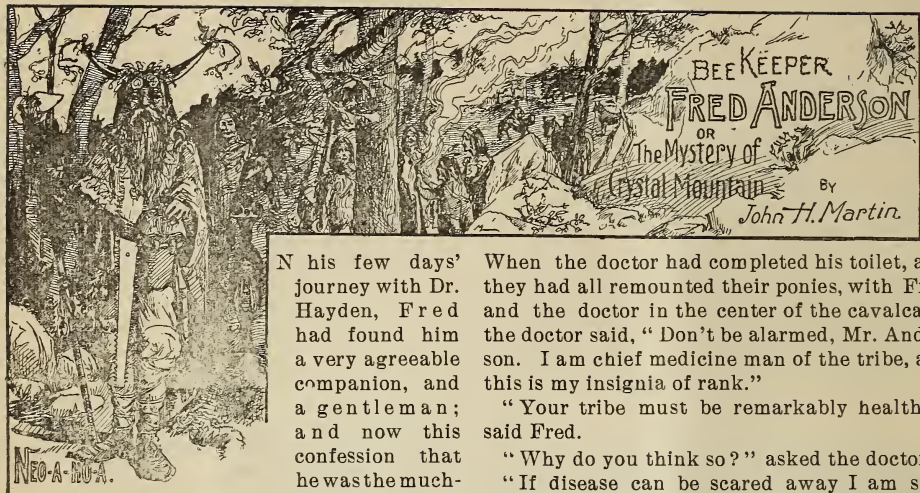
[The following, from Mr. F. A. Salisbury, an other bee-keeper living in the same county with Mr. Doolittle, after having tried the tall section favors the square one. Here is what he says:—Ed.]

A SERIOUS OBJECTION TO TALL SECTIONS.

Mr. Root:—In your editorial in Dec. 15 GLEANINGS, in regard to oblong sections, I want to say that I have used them for three or four years, and am getting back to the square, on account of foundation, when being drawn out by the bees, is, in too many instances, fastened to the separators. The sections are $3\frac{1}{2} \times 5\frac{3}{8} \times 1\frac{1}{2}$. Now you will see that, on account of the height and narrowness of the section, the foundation, if bees work on one side a little more than on the other, will be swung over so as to strike the separator a great deal sooner than if the section were only $4\frac{1}{4}$ high. On this account I am changing over to the regular $4\frac{1}{4}$ section. I think that honey in oblong sections looks a little better than in square sections; but there is too much of fastening of foundation to suit me.

The article you publish, taken from the *Progressive Bee-keeper*, hits the nail. F. A. SALISBURY.
Syracuse, N. Y., Dec. 19, 1896.

[Mr. Salisbury's difficulty, if the same should be experienced by other bee-keepers, will be a somewhat serious one. But it seems to me the tendency of the starter to lean over to one side can be overcome by side fastenings; but Capt. Hetherington, and a large number of other York State bee-keepers, are using tall sections quite extensively. Mr. Danzenbaker never spoke of any trouble in the line hinted at by Mr. Salisbury, and he fastens starters at the top only. And those who are using the old square sections, and have thought there *might* be an advantage in change, are very anxious to know whether others have had the same trouble. How many shall we hear from now, both for and against tall sections? Let us have the truth, cut where it may. This is an important matter and I hope we shall hear from many.—Ed.]



man of Crystal Mountain gave him such a shock that he reeled a little in his saddle.

The doctor, seeing his agitation, said, "I trust, Mr. Anderson, that in the few days of our acquaintance I have impressed you with the fact that I possess, at the least, a passable character, and I trust that you can discriminate between character and reputation. Reputation is what other people say of us. If they have received false impressions of me, and even enlarged upon them, and have sent them broadcast through the papers, it affects only my reputation, while my character, to those who know me, is brighter from the contrast. Now, as I told you at the commencement of our journey, if you have any doubts, or if you think I will not live up to my agreements, you can return to Sacramento at my expense. Give the matter careful thought, and give me your final answer when we reach yonder clump of live-oak trees, an hour's journey ahead; for when beyond that point you will not be allowed to return until the expiration of our agreement."

Fred answered not a word; but for the next hour his thoughts were busy. Doubts, one after the other, were thrown aside; and as he cast them away his spirits became more buoyant; and when the party passed under the live-oaks he reined in his horse and clasped hands with his employer, and said, "Dr. Hayden, I will trust you."

"You decide wisely," said the doctor.

Under the oaks they were met by a score of mounted Indians from the rancheria. They all dismounted, and formed in a circle with the doctor in the center. A peculiar leathern box was passed several times around the circle, and at length passed to the doctor. The latter opened the box and removed therefrom, and proceeded to bedeck himself with, the most grotesque outfit Fred had ever laid eyes upon.

When the doctor had completed his toilet, and they had all remounted their ponies, with Fred and the doctor in the center of the cavalcade, the doctor said, "Don't be alarmed, Mr. Anderson. I am chief medicine man of the tribe, and this is my insignia of rank."

"Your tribe must be remarkably healthy," said Fred.

"Why do you think so?" asked the doctor.

"If disease can be scared away I am sure your habiliments will do it. My heart even throbs now at the sight of you."

"Yes, yes; I understand," said the doctor. "Your disease, then, must be of the heart. Well, we will see if the things about Crystal Mountain will not prove a cure-all for you."

Upon arrival at the rancheria the whole cavalcade entered a sort of plaza that was well surrounded by circular houses; old men, squaws, papooses, and dogs seemed to spring out of the ground on every side. The horsemen circled around the plaza several times, keeping up a monotonous chant. The doctor, now Neo-a-ho-a, or medicine man, kept time by rattling a gourd, and at regular intervals giving it a tremendous whirr over the teeth of a saw-fish, which was a part of his regalia. His head-dress of long steer horns had obsidian rattles at the tips that glistened in the sun, and also kept up a rhythmic tinkle with every movement. At the conclusion of the chant, the bundles from the pack-ponies were deposited with the doctor, and, with the aid of the chief, the various articles, useful and ornamental, that had been purchased in Sacramento, were distributed to the various parties for whom they were purchased.

At the completion of the distribution our medicine man, with Fred and two of his immediate helpers, retired to his own tent-like structure. Here he discarded his outlandish dress, and said to Fred, "You see that we live in a rather primitive way here. This portion of the rancheria that I occupy is like all of the rest, except in size; the ground is our floor; our fire is made in the center, and the smoke escapes through the hole in the roof. The Indians roll up in their blankets and sleep in the surrounding space; but I have cots, as you see, and you can occupy the one in yonder nook."

"But, doctor, I can not imagine how you, the only white man here, could obtain the confi-

dence of these Indians and become their medicine man."

"That was a very simple matter," replied the doctor. "and it all happened through a swarm of bees. For several years my travels have led me among the different tribes of Indians all up and down this coast; and in many of them I find the snake recognized as a symbol for either good or evil in their religious rites. When I came here a few years ago I was surprised to find this tribe having traditions much like the Moquis of Arizona, and, like the Moquis, they had a snake-dance. I had learned the Moqui language, and found it easy to converse with these people, whose language was similar: and, being a physician, I affiliated as far as possible with the medicine men. With this tribe, in-

Neo-a-ho-a made a valiant defense; but as bees were unknown in this portion of the State up to that time, he was fighting an unknown enemy at a great disadvantage. The whole rancheria was aroused; but every one who ran to the aid of Neo-a-ho-a ran back howling with half a dozen bees on his or her face or hair. For a short time it looked as though there would be a complete stampede of all of the occupants of the rancheria.

"I had been a manager of bees in the East, and, taking in the situation as soon as I heard the commotion, I made a smudge, and, taking a large blanket, I brought the medicine man to a place of safety in the center of one of the large huts. I saw at a glance that the poor fellow could not live. My remedies were few,



The burial of Neoahoa. The New Neoahoa.

R. H. Murray. Clev. O.

stead of courting the favors of a venomous reptile, as did the Moquis, they performed their rites with the harmless gopher snake, and for this purpose kept half a dozen in as many different stone cages in the cliff near the rancheria; and at planting-time their rites required them to be all huddled into one cage or small cave. A few days after my arrival, while the medicine man Neo-a-ho-a was performing some rite over the snakes, with sweet-smelling herbs, an immense swarm of bees settled upon the entrance to the little cave where the snakes were kept. As a result, the new comers took possession, and, being no respecters of persons or snakes, even if the latter were pampered as divinities, there were in short order six dead snakes.

simple, and ineffective. I called the chief and old men into the hut, and informed them of the fact; and while I was bent low chafing the poor fellow's body, in the throes of his last gasp for life, he threw his regalia over me, exclaiming, 'Neo-a-ho-a,' which meant that I would be his successor; and while I was all the time fearing that these simple people would lay all of the untoward circumstances to the presence of a white man, strange to say I was accepted by the head men of the tribe without a murmur of dissent. 'There is a providence that shapes our ends, rough hew them as we may,' I exclaimed, as I arose with my new insignia of office upon my shoulder. After many years' wandering after a beloved object that had

eluded my search it seemed to come to me like a flood of light from above that, if I would take the place of the Neo-a-ho-a and wait here, the object would come to me. and for many years I have waited. Of this world's goods I had plenty, and now as medicine man I would try to lead the whole tribe up to such a moral height as their natures and surroundings would permit. The moment was ripe for a change. I had but to put in my sickle, and reap.

"After much ceremony in removing the sacred snakes from the little bee-cave, and burying them with Neo-a-ho-a, I found that, in substituting a swarm of bees as an object of worship, I had an excellent foundation from which to lead up to Christianity. Here in this little insect-community I found industry, cleanliness, love, fidelity, order, providence, alertness, patriotism. The fathers of the tribe were slow to give up their old traditions; and to please them I still wear the regalia; but to the younger members of the tribe I have thoroughly inculcated Christianity. How I have succeeded you have in part seen at Sacramento, where their conduct was far better than that of many of their white brothers; and as the weeks roll by you will learn much more."

"And you are the bad man of Crystal Mountain!" said Fred.

"I am the bad man of Crystal Mountain," replied the doctor, with a sad smile.

"In the matter of good morals and good works, doctor, you remind me of my good friend Prof. Buell."

"Certainly he is a kindred spirit; for whenever you mention his name my heart warms toward him. I believe you said he had an invalid daughter. What was the nature of her disease?"

Fred hesitated a moment for a reply, and, with an evident effort, he said, "Doctor, she is insane."

□ "Sure, sure, that is grievously unfortunate; and, Fred, what is the young lady's given name?"

□ "Her name is one among thousands; it is Alfaretta."

"Alfaretta! did you say Alfaretta?" shouted the doctor, springing from a recumbent position in his easy-chair. "Alfaretta, did you say?" grasping Fred by the shoulder.

□ "I certainly said so," replied Fred, with evident alarm; "her name is Alfaretta Buell."

"Strange—strange!" said the doctor; "and that name *Buell* comes up every time. If it were Bull, plain Bull, I believe the mystery would be solved."

Then the doctor walked back and forth across the room with head bowed. At length he stopped suddenly, and said:

"Fred Anderson, did you ever hear the name of Adrietta mentioned by the Buells?"

"I never did," replied Fred.

"Let me tell you, Fred Anderson" —

Here the doctor was interrupted by the rattling of gourds without, and, hastily donning his regalia, he said, "Surely I had forgotten



our evening council. As this council pertains to your advancement, Mr. Anderson, you will have to remain here. My helpers will bring you your supper, then you can rest; and do not be surprised if I tell you that we start for the bee-ranch at midnight."

"After the last few days' experience I will try to allow nothing to surprise me," replied Fred.

"Good! good!" said the doctor, with unusual warmth as he grasped Fred's hand, and then immediately left the tent.

Fred, not being fully recovered from his recent illness, sought his couch early; but for a long time he lay awake speculating upon the episodes of the afternoon, and especially upon

the effect the name *Alfaretta* had upon the doctor. Sleep at last came to the tired body; but in the mind it was dreams, dreams, one after another.

It must have been near midnight when he was sporting with *Alfaretta* and the mermaids, and then with Matt Hogan, as on the night of the tempest, gliding swiftly down the river. The motion seemed so real that he awoke with a start, and then a struggle. He was securely bound to his cot, and was being borne rapidly along by several dusky persons. In the darkness he could not distinguish that any of them were his former traveling companions, and in utter desperation he shouted, "Dr. Hayden! help! help!" The night air fell cool upon his face, but not a reply came to his appeal save the dogged trot of the Indians. Fred was now fully aroused; but finding that neither struggles nor shouts made any impression upon his captors he submitted through sheer exhaustion. When one set of carriers tired, another set relieved them, and the trot, trot, continued. It seemed an age to Fred before his cot was halted and set down. His hands were here loosened, and he was motioned to arise. He noted that the Indians around him were not the same that he had seen in the rancheria, and the stopping-place was where many huge boulders reared their ungainly forms; and near one of them was what appeared to be a long low adobe cabin; near it a few Indians were kindling a fire. Fred had no more than taken in this situation than he was closely held by two of the Indians, his arms pinioned, and a tight bandage placed over his eyes.



I WOULD call special attention to the article by Mr. Davenport, in this issue, regarding the danger arising from the use of bisulphide of carbon in destroying moths in comb honey.

IN this issue, under "Ridgepole Musings," R. C. Aiken gives some interesting and valuable facts about alfalfa. Much of what he says regarding this famous honey-plant will be new to many.

THE EDITOR OF THE BRITISH BEE JOURNAL IN CALIFORNIA.

THE editor of the *British Bee Journal*, Thos. Wm. Cowan, whose name I have often mentioned in these columns, has been making a hurried tour across our great and beautiful country. I knew that he was expecting to make the trip, but was surprised to receive a letter from him so soon, not from "Merrie England," but from our beautiful State of California. Here is the letter, which I have taken the liberty to give our readers:

Dear Mr. Root:—I am pleased to say that Mrs. Cowan and I arrived here after a very pleasant journey via the Sunset Limited, and were much interested in all we saw by the way. I am very glad we came by that route, for we found it very cold in New York, and I am afraid we should have found the northern route rather unpleasant at this time of the year. I shall hope in the spring or early summer to travel by that route and stop off to see some of my bee-keeping and other friends. I see GLEANINGS of Dec. 1, and observe that you have made a very good copy of the illustrations of my pamphlet on "Foul Brood." I also notice that Mr. A. I. Root has gone to Arizona, and I shall look forward with interest to his account of what he sees. I should have liked to stop some days there to study the cacti, and to have collected specimens, but I hope to do so some other time. THOS. WM. COWAN.
Loomis, Cal., Dec. 21.

Mr. Cowan is without doubt, the most distinguished bee-keeper from abroad who has ever visited our country. Indeed, for scholarly and scientific attainments I doubt if he has an equal among those who love and study bees. Bee-keepers all over this broad land will be glad to extend him a warm welcome.

THE LINCOLN-CONVENTION GROUP.

I HAD hoped to get the group picture of the Lincoln convention, shown on page 11 of this issue, long before this; but I have been waiting to get the names, in answer to request, corresponding to the numbers; but so far they have failed to come to hand. I can give a few of them from memory; but as I find Mr. York, in the *Am. Bee Journal*, gives a larger list than I can recall, I copy his list entire.

- | | |
|---------------------------|------------------------|
| 1. Mrs. J. N. Heater. | 21. Mrs. A. L. Amos. |
| 2. Miss Jennie Razer. | 22. Mrs. R. C. Aikin. |
| 3. Mrs. V. Collins. | 23. R. C. Aikin. |
| 4. Chancellor MacLean. | 24. T. R. Delong. |
| 5. A. I. Root. | 25. Prof. L. Bruner. |
| 6. Mrs. A. L. Hallenbeck. | 26. L. D. Stilson. |
| 7. E. B. Gladish. | 27. H. E. Heath. |
| 8. Ernest R. Root. | 28. Mrs. E. T. Abbott. |
| 9. George W. York. | 29. S. H. Herrick. |
| 10. Dr. A. B. Mason. | 30. J. C. Stewart. |
| 11. Rev. E. T. Abbott. | 31. J. C. Masters. |
| 12. Mrs. Eugene Secor. | 32. E. Kretschmer. |
| 13. Hon. Eugene Secor. | 33. W. C. Frazier. |
| 14. J. C. Knoll. | 34. Rev. Clay C. Cox. |
| 15. A. Laing. | 35. Mrs. E. Whitcomb. |
| 16. Dr. C. C. Miller. | 36. Charles White. |
| 17. Mrs. Compton. | 37. M. A. Enslow. |
| | 38. L. M. Brown. |

At the close of one of the sessions we assembled on the steps of one of the college buildings (the Library Hall, I believe), and one of the members of the Lincoln meeting, a Mr. Lovell, professional photographer of Omaha, Neb., as well as a bee-keeper, made the "shot."

Many of the faces bring back to me pleasant memories, and I should like to give some of the little incidents, chats, and handshakes called forth by many of the faces, some whose names I can't even now recall; but space, and the fear of ignoring some just as deserving, forbid. One pleasant *good* face brings back a feeling of sadness, and that is the likeness of Mrs. A. L. Hallenbeck, whose untimely death I have already spoken of in a footnote to one of the Straws in this issue. Quiet and unassuming though she was, she will be remembered by all who attended that meeting.

THE NAME OF THE BIRD THAT PUNCTURES THE GRAPE.

You will remember that a neighbor of ours captured a peculiar kind of bird that was caught in the act of making pinhole punctures in grapes in Medina Co. One specimen was sent to Prof. Lawrence Bruner, whose biographical sketch appeared in our last issue, and this is what he says of it:

The bird sent is the Cape May warbler (*Dendroica tigrina*). While the bird's beak is admirably fitted for such work, that it really is the culprit seems a surprise, since the warblers are supposed to be practically insectivorous in their food habits. Just at present I do not happen to have a life-history of this bird at hand. I would suggest that you write to Dr. Merriam, of the U. S. Department of Agriculture, Washington, for a statement of grape-puncturing birds.

LAWRENCE BRUNER.

Lincoln, Neb.

As Prof. Bruner is a very thorough student of nature I am sure he is right in giving the name. Moreover, I find the Standard Dictionary gives the following:

It is an American insectivorous mniotiltoid bird, usually brilliantly colored, and with little powers of song, as the common summer or yellow warbler.

The species seems to be somewhat rare in this vicinity; but there are enough of them, from present indications, to puncture every grape on a vine. As I pointed out in our last issue, bee-keepers should put their fruit-growing neighbors in possession of these facts, and thus take the blame off from the bees and put it where it belongs.

BEE-STINGS, AND THEIR PHYSIOLOGICAL EFFECTS.

A SHORT time ago Dr. R. S. Lindsay, of Philadelphia, wrote us, asking for information regarding the effects of stings on the human system. I spent considerable time in looking over our back volumes; and as the reply I made to the doctor may be useful to others I decided to put it in permanent form, and here it is:

DR. R. S. L., Philadelphia—

Dec. 10.
Dear Sir:—The average bee-keeper is not at all affected by swelling after being stung. He experiences the same sharp pain, but no fever or other unpleasant effects follow after two or three minutes. The system seems to become inured. But occasionally, when the bee stings along a vein there is an after-effect as explained on page 68 of our issue for January last. We do not know to which school of medicine you belong; but the homeopaths use a great deal of *apis mellifica* in the form of a tincture. We have been supplying Boereck & Tafel, of New York city, with bee stings in lots of 10,000 at a time. We are supplied with a wide-mouthed bottle holding about 2 ounces, and filled about two-thirds full of sugar of milk. A comb of bees is placed before a window, and from this comb the bees are picked off one by one with one pair of tweezers, while another pair removes the stings, the latter dropping into the sugar of milk. The bee in each case is crushed immediately before the removal of the sting. In this way the stings are removed until the whole number are in the jar, when it is corked and sent to the parties named. The apiarist can usually work only about three or four hours a day at removing the stings; and even then he experiences pain in the eyes, and a sort of sickness from inhaling the odor of the poison.

As you see by the references below, there can be no question but that the stings do relieve certain kinds of rheumatism; but just what kinds I am unable to say. A letter addressed to the persons whose names are attached to the articles would

probably secure the desired information. The following is a list of the journals referred to:

1896, Jan. 15, pp. 51, 68; May 15, p. 386; July 15, p. 528.
1894, Aug. 15, p. 661.
1893, Sept. 15, p. 713.
1892, Sept. 15, p. 699.
1891, Sept. 15, p. 748; June 1, p. 486; April 15, p. 306; Dec. 15, p. 961.

The doctor is investigating the subject very thoroughly, and has promised to send us an article later on, giving the physiological effects of bee-stings, especially so far as they relate to the cure of various kinds of rheumatism.

"BEE-KEEPER FRED ANDERSON."

IN all, there have been just three persons who have protested against Mr. Martin's story, out of the large number who have spoken very highly of it. Perhaps these three friends (and there may be others who think as they do) have not even read the story. Perhaps they never read *any* stories, from conscientious scruples. With such I have no argument at all. While I know there is a class of novels whose tendency is demoralizing and bad, Mr. Martin's serial is both instructive and moral in its tone. The author himself is an earnest Christian and an active temperance man, and believes in inculcating Christian ideas and principles in every thing that he has to do with. Only the other day we received a letter from a Christian missionary, congratulating us on the excellent, moral tone of the serial.

I said the story was instructive. In all that Mr. Martin has written, I do not believe he has ever portrayed California life and incidents any more faithfully and vividly than he has done in this story. Indeed, I believe it is nearly all based on facts, and that the characters that he writes about have been, in some instances at least, real.

It is impossible to please all. Indeed, a few, very few, object to the Home Papers, and a few also can't see any use of the footnote; but the very great majority have expressed themselves emphatically in favor of both.

WINTERING, AND THE VARIATION IN CONSUMPTION OF FOOD.

DOOLITTLE makes the point in the *Progressive Bee-keeper*, that the consumption of food is very much less during the first part of the winter, or when bees are quiet, than later on, when they become uneasy; that it is about a pound a month at first, and from five to eight pounds a month after they have become uneasy. This is entirely reasonable and probable, though I doubt whether there are many other bee-keepers who have noticed the difference—certainly I had not.

I do know that, when I was sick some two years ago, and on the verge of nervous prostration, I was starving to death with plenty to eat. It seemed to me as if it were necessary to eat two or three times as much food in order to keep up my strength (and then didn't do it) that it

now requires while in perfect health (thanks to the beef treatment).

The bees, during the fore part of the winter, are in a condition of health; but later on, the retention of the fæces causes a condition of ill health, uneasiness, and, consequently, a larger consumption of food.

Mr. Doolittle, in speaking of the difference in the amount of food consumption, probably had reference particularly to cellar wintering. Bees, if wintered outdoors, especially in localities where they can have occasional flights, probably will not consume much more toward spring than they would in the fall, the reason being that they have an opportunity for a cleansing flight.

The whole question is interesting and practical; and if we can keep down the tendency toward disease in the spring—that is, by feeding them pure wholesome sugar syrup—then I think the food consumption will not vary greatly from the early to the latter part of winter.

MR. BENTON AND APIS DORSATA.

PROF. A. J. COOK, in the *American Bee Journal*, deplores the action taken at the Lincoln convention against the importation of *Apis dorsata*, and wonders whether the prejudice against one of the employes of the Agricultural Department, Mr. Frank Benton, was not really the foundation for this action. If there were objections to the person who would be likely to be employed by the general government, then he would "make the objections to the individual, and not try to balk the enterprise."

It might be stated, however, that, if Mr. B. is a *persona non grata* to the mass of bee-keepers, or their leaders, there is another man. Mr. W. K. Morrison, who is, perhaps, just as capable of performing the task. He is anxious to undertake this work, and his plan has been already outlined in these columns. Perhaps it is not necessary to repeat that I have been all along in favor of this plan, because it does not involve the expenditure of money on the part of the government. What Mr. Morrison does need, however, is personal influence of men in high standing in the councils of our nation. He would expect to secure the coöperation and assistance of other nations in a similar way, and all countries alike would share equally in the benefits, or in proportion to the assistance rendered. I do not believe that bee-keepers as a rule would be opposed to such a movement, and perhaps this would satisfy the desire of Prof. Cook.

THAT HONEY-JUMBLE RECIPE A SUCCESS.

In our last issue, page 884, Dr. Miller gave us, under the heading of Straws, a recipe for making honey-jumbles. You will remember I said in my footnote, the getting hold of this recipe was a real acquisition; but I feared that the

women-folks of our homes would not be able to duplicate the jumbles sent out by the large bakeries, in quality and lightness. Well, it seems the women-folks in Dr. Miller's family have made some jumbles that, to my notion, are fully equal to those we have been in the habit of buying. Indeed, the flavor is a little superior, owing to the better quality of honey used. Well, here is what the doctor says:

I send you by this mail a sample of honey-jumbles made from the recipe given in "Straws," Dec. 15, the only difference being that, instead of considering 4 ounces of soda the right thing for a barrel of flour, the cook insisted it should be 4 pounds. I've no doubt that's correct. Of course, we didn't use the whole barrel of flour at the first trial. If you like them as well as I do, I think you'll admit that there must be some unselfishness in me to send you the last of the batch—they were made several days ago—instead of eating them myself. I've eaten four to six at a time without killing me. If this crowded season ever gets by so there's more time for cooking I want to have the same recipe tried with less water and all honey, instead of honey and molasses. The only trouble with this lot was that the dough was so soft it was hard to handle.

After testing them myself I gave samples to our printers, and they call united with me in pronouncing them to be as good as the best jumbles ever made. "Barney," the head printer, would have to get his wife to make some, and I am of the same mind.

It seems there was a slight mistake, probably, in the recipe. One of the ingredients was carbonate of soda, 4 ounces, and it appears that it should have been 4 pounds. The whole recipe, then, with this correction, will read as follows:

Flour, 196 lbs.; lard, 3 lbs.; honey, 12 gallons; molasses, 3 gallons; carbonate of soda, 4 lbs.; salt, 1 lb.; water, 3 gallons; extract of vanilla, 1 pint.

Of course, the proportions in this recipe are too large for domestic use; and for the convenience of our women-folks I have reduced it to one-fortieth, figuring 12½ lbs. to the gallon of honey and syrup. The recipe will stand thus:

Flour, 5 lbs.; lard, 4 oz.; honey, ¾ lb.; molasses, 14 oz.; carbonate of soda, 1½ oz.; salt ½ oz.; water, 1 pint; extract of vanilla, ¼ gill.

If the honey is not of heavy body, increase the quantity slightly. Perhaps the women-folks would prefer to have this reduced to "cupfuls;" but as such a measure is very indefinite, we can get at the result more exactly by giving the figures in pounds and ounces, and I suspect it important that the proportions be as near exact as possible. I believe it would be possible to use all honey instead of molasses and honey.

If all the women-folks can succeed as well as Dr. Miller's have done, this recipe is going to be of great value to bee-keepers. Every bee-keeper who has honey to sell, ought now to be able to offer to his customers honey-jumbles, home-made, and they will sell like hot cakes.

It might be well to call attention to the fact that jumbles will keep almost indefinitely. Indeed, they seem to improve with age. If they get a little dry, shut them up in a bread-crock and then see how moist they will become.



AT THE ATCHLEYS.

Dec. 8.—I omitted to mention that the bees by the office door have not only become accustomed to people passing, but so used are they to the tramping on the floor that stamping and jarring the floor has no effect on them whatever. They have apparently forgotten how to sting; and although they are handled repeatedly without smoke or veil, no one has ever been stung by them.

A MULE WITH A BEE-VEIL.

In unloading bees it is often desirable to drive right in among the hives. Well, bees seldom trouble a horse more than to buzz about his head; therefore the mule trained for this work wears a bee-veil made on purpose for him, and thus equipped he goes anywhere without any reluctance whatever.

THEIR 500 NUCLEI.

The Atchleys have a little more than 500 hives now, devoted to queen-rearing; later on they will be divided so as to make a full thousand. They are located in six apiaries, four to seven miles apart. Yesterday we visited the Cyprian apiary, the Holy Land apiary, and the Carniolan apiary. So far as I can learn, they have a locality here that furnishes honey to some extent every month in the year. They do *no feeding*, and with any decent care there need be no robbing. I have looked over hundreds of hives, and there were almost no weak ones, and none but that are well provisioned. As a rule, eight frame Dovetailed hives are used. I suggested that these were larger than necessary; but, all things considered, I believe they are about right. With smaller hives there would be more trouble on both extremes—getting out of stores, and getting the hive full of honey or full of eggs and brood before the attendant got round. During 1896 they have raised about 3000 queens and secured about 10 tons of honey. Our veteran readers may remember I once advocated, pretty strongly, putting the hives on the ground, with no *bottom boards*. Well, here is a whole large apiary worked on that plan. It is Willie Atchley's apiary of Holy Land bees. It stands on a sandy knoll shaded with wild grapevines and live oaks. The sand is banked up a little around the hives, and the entrance is contracted by sand piled up a little on either side. It seems to work admirably. In a damper soil I would prevent rotting the hives by a small stone or half-brick under each corner, then make it tight around the bottom by clean sand that will dry out quickly after a rain. Any kind of bottom-board is pretty sure to make a harbor for insects, to admit cold air underneath, to rot, warp, or be in the way. This stock (100 colonies) of Holy Land bees has all been reared from a queen from Baldensperger, direct, in 1894.

There isn't a trace of bee-paralysis or foul brood anywhere in this part of Texas. I have looked the apiaries over carefully, but didn't see any thing of the symptoms of paralysis.

HOW TO CUT PERFORATED ZINC FOR ENTRANCE-PASSAGES.

Have the strips so that a *very narrow* piece rests down on the bottom-board. It is like this: It bothers a horse to step over a board a foot wide, but he can step over a strip 3 inches wide, when set edgewise on the ground, without any trouble. So with the bees. To get the correct

spacing there must be just a little zinc left on the lower edge, so as to exclude the drones but to admit a worker loaded with pollen; don't trouble him to raise up his heels so he can get over a board more than "knee-high."

THE TEN-YEAR-OLD BEE-KEEPER AND ENGINEER.

Leah Atchley, ten years old, has just been showing me through her apiary of ten hives. She can lift out the combs and find the queens as deftly as almost any one whose eye meets this. Not only this, but when the factory was started up to fill a small order she took her post as engineer and fireman. It is worth a lot to see her black eyes sparkle as she showed me she was as much at home here as with the inside of a bee-hive. Her father says he would rather trust her to keep up steam, and see that everything is "O. K.," than any hired man he can get. As the boiler is 12 horse power and the engine only 10, it is not very hard to do the firing.

It is in just this way that the whole family help in the business. While Leah looks after this department, Charley, aged 17, runs the planer, saw, and other machines. Miss Amanda is cashier for the firm; takes charge of the funds, does the banking, pays off the help, etc.

You must not think from what I have written that their children are all work and no play. If you could hear them now you would think from the childish voices and merriment there was no lack of recreation. It is $2\frac{1}{2}$ miles to school, it is true; but "Nick," aged 13, just brought me his department-card, to show that he stands from 90 to 96 in nearly all his studies. The 96 was for penmanship, and he got it by doing business *with a pen* in his father's office. His "arithmetic" was almost as high.

THE CLIMATE OF SOUTHERN TEXAS, ETC.

Beeville is about 30 miles from the Gulf, 50 miles by rail; Corpus Christi is about 60 miles by rail, and quite a business is now growing up there in early vegetables for the North. Before the freeze I have spoken of, tomatoes, wax beans, summer squashes, etc., were being shipped daily. This freeze during the last of November was a very unusual thing. Many winters pass without frost enough to damage the most tender stuff. During the great Florida freeze of two years ago the orange-trees about here were either killed or greatly injured. I have now been here three days, and the temperature has ranged from 46 to 76. On Sunday, Dec. 6, the sun was so hot I was glad to see it go down. During the day a shade-tree was very refreshing.

THE EXPERIMENT STATION.

Yesterday we visited a branch of the Experiment Station, under the management of F. A. McHenry, about five miles from Beeville. He is testing oranges, lemons, pineapples, grapes, etc. Nearly a hundred varieties of grapes and as many of peaches are being tested. By the way, friend Atchley had so many peaches last year that bushels were allowed to go to waste. One reason was, however, they needed marketing at just their busiest time with the bees. The fruit is rather smaller here than further north. I was told by some that garden stuff didn't do well; but with plenty of water they get fine crops on the experiment farm.

Before Mr. McHenry was given the management he sold \$227 worth of cabbage from two-thirds of an acre, on a little garden-patch in Beeville. Not only this, but he produced similar crops on the same land year after year. Of course, he used large quantities of stable manure, and water when needed; and yet most

people around here will tell you stable manure won't answer—"no good in this climate." This may be to some extent true, without water. On the station farm, McHenry makes a 12-foot windmill water about three acres very well; but I think the wind is more regular every day here than in the North. The canagarie root does finely here, as, in fact, do all roots, pretty nearly. Sweet potatoes and yams (including the vineless) are right in their home, and, of course, no irrigation (as a rule) is needed. They bring 50 cts. a bushel now. Irish potatoes can be grown only in early spring, and they must be used pretty soon, for they won't keep through the summer. McHenry made last spring \$75 from an acre of early potatoes. The variety that did best was the Triumph—the same I have placed at the top of the list for an early potato in the North. The numerous varieties of non-saccharine sorghum, kafir corn, and all the rest, would puzzle a botanist, let alone a farmer. The chicken-corn sorghum will grow two crops in a season. Just cut it when the seed is ripe enough for chickens, and another full crop springs right up from the suckers. If you break the stalks down, the chickens will do the harvesting. Eggs are 20 cts. a dozen, and chickens can be hatched every day in the year.

Now, you need not all move down here, for both McHenry and Mr. A. assured me there are any quantity of folks here, just as there are up north, who are going about complaining they can't find any thing to do. Apples won't do here, but plenty are grown in the northern part of the State. W. C. McDowell has a very pretty irrigated garden right in the town of Beeville. I was pleased to see a beautiful stand of transplanted onions. They are red Bermudas. He says they will mature in April, and he often gets a nickel apiece for onions averaging 1 lb. each.

A great variety of hardy vegetables stand out all winter. Cabbage was considerably injured by the freeze, but this does not often happen. Cotton cloth is used over the plant-beds, but is more to keep off the hot sun than to protect from frost. Winter cabbage brings 5 cts. per lb. at retail. We saw a few heads ready to cut, and fresh cabbage brings the above price this month. McDowell scatters fresh manure, both stable and poultry, very liberally through his cabbages; then he cultivates it in thoroughly, turns on water, and says the manure never hurts his cabbage. When I was introduced to the manager of the experiment station he said he had just purchased our tomato book, so you see we received a warm welcome, both from himself and his good wife. The State has given him 100 acres of beautiful land, and his work is to see what can be grown on it profitably.

□ Beeville is a town of windmills. They get water at about 50 and also at 100 feet deep. The deep vein washes nicely with soap, but is somewhat alkali, after all. The price for drilling wells here is only 50 cts. per foot, the owner paying for all pipe needed to case off the surface water.

I must not forget the fireflies of South Texas. One warm night they were scattered over the ground so that it literally sparkled with twinkling jewels. When I tried to catch them they either "went out" or hopped like a cricket. I am told they are a sort of snapping-bug fireflies.

Somebody brought Mr. Atchley some grape cuttings from California. They were planted in his garden in front of the house, and in less than one year he had a few bunches of ripe grapes, and these were cuttings only—no roots at all to start them.

Dec. 12.—Here I am at Tempe, Arizona,

among the grand old mountains once more. If the chap who wrote—

I love thy rocks and rills

had taken a trip through Arizona he could have found lots to love, especially as far as "rocks" are concerned. Next to the mountains come the great alfalfa-fields, kept as green and bright with the sparkling water as was ever a clover-field in May or June. It made me think of the words of Scripture, "He maketh me to lie down in green pastures; he leadeth me beside the still waters." I really do not know of a more refreshing and reviving sight than a field of alfalfa in the month of December; and then to see droves of cattle, sleek and happy! In crossing the Texas plains, somebody told me they figured it wanted five acres to a cow on those ten-thousand-acre pasture-lots. My impression is that some of the alfalfa-fields well irrigated might reverse the proportion, and put five cows on one acre.

By the way, the past season has been a grand one for alfalfa honey. Mr. J. P. Joy, Secretary of the Bee-keepers' Exchange, produced from 500 colonies, in only two apiaries, 50,000 lbs. of honey. Mr. J. Nippert and others have done as well or better. This organization has been for some years past purchasing the cans for their members by the carload, and in the same way the secretary makes sales and ships the combined product of all its members: and from what I gathered at the convention I think it has been of great benefit in both ways. They have regular meetings four times a year.

SUPERSTITIOUS MOUNTAIN.

Dec. 14.—Before daylight my brother, J. H. Root, Mr. John Nippert, of Phoenix, and myself, started out—I on my new Columbia wheel, and the others in friend Nippert's buggy. Jess (my brother) and I rode the wheel alternately; but toward noon I went on ahead so as to get my nap before dinner, and be in good trim for the mountain climb in the afternoon. The day was most beautiful, like all the days so far in Arizona, although the morning was rather cool. After passing the beautiful town of Mesa, and getting clear out on the wild desert, I found the most beautiful wheel-riding I have ever found in the world. It is true, I have seen gravel pikes, shell roads, and asphalt pavements equally good, but never before have I seen the whole wide country so I could go where I would and find it equally good *everywhere*. There had been just rain enough to form a crust on the surface of the sand, and this seemed to leave hardly a trace to show where the rubber tire had passed. There were bushes, but so scattering they made one think of a tastily arranged garden; and the broad, constantly curving walks between the shrubbery made an ideal ground for the wheel.

As we neared the mountain, beautiful flowers began to appear, of varied colors and of different form from any I had ever seen. At different points along the way the song of birds rejoiced my heart, and with it all the fascination of the beautiful weird mountain that came nearer and nearer every moment caused me to sing again and again, "Praise God, from whom all blessings flow."

It is 35 miles from Tempe to the mountain, but the latter seemed so near about 10 o'clock I felt sure I should soon be there. But the nearer I came the more the road seemed to unwind, or lengthen out, until I began to think there was some ground for giving the mountain its name. I was always *almost* there; and the road seemed always dipping down into a ravine just at the foot of the mountain; but the "downhill" didn't seem any easier, and finally

I began to get both tired and hungry. When I did at length fetch up at the store at Goldfield I was told my road had been *uphill* all the way, and that, in fact, I was on ground 200 feet higher than Tempe.

I was soon at the mining boarding-house, and disposed of a cup of coffee and a piece of pie in a very short space of time. None but a wheelman can tell how really delicious a little refreshment is after such a ride. The obliging Chinese cook then placed at my disposal quite a dainty cot on which to take my nap. It was in a cool tent outside, and, in fact, all the buildings in the town, nearly, are roofed and sided up with cotton cloth. It gives air and light both, and seems to be warm enough for this climate.

Jess and Mr. N. came around in about half an hour, and then we had dinner for sure. Although every thing is hauled here by team from Tempe (the nearest railroad station) we had nice meals at an average of only 33½ cts. each. We were told a whole day is needed to climb the mountain and return, but we decided to make the best we could of it in half a day. A large canteen of water and a basket of lunch was all our luggage. When a man said it was still two miles to the foot of the mountain we could hardly believe him. Why, there were those great towering rocks *right in front of us* now. Really we tramped hard for an hour before we were in the trail at the foot of the canyon.

Let me say right here, that we got into several sore troubles by carelessly losing the trail. Whatever you do, don't lose the trail, when there is one, in climbing a mountain.

I told you the mountain always seemed nearer than it actually was. Well, when we were right before it, a column of rock that might be a thousand or more feet high seemed to bend over and menace us by threatening to fall on our heads. There was something weird and uncanny about it, but awful in its grandeur. I can't tell now whether that rock is straight up and down, or whether it leans out from the mountain. Again and again I gazed at it and then sat down to gaze at my leisure, and finally voted the sight of it alone was worth the whole trip. With its strange domes and spires and fanciful turrets and battlements, I think it should be called the *Enchanted Mountain*.

The trail first led up a canyon, and I tell you it is work indeed to climb it, even if you follow the trail. If you get off it, look out. At every turn, however, you are rewarded with new beauties, lofty rocky spires of ever changing form and color; and a little further along, pools of deliciously cool water, in the water-worn cavities of the rock. At one point you walk over a tiled floor almost smooth, only on an incline. The tiles are diamond-shaped because of checks or cracks in the rock, and they have been smoothed and polished by the gravel that has washed down over them for ages. The slope of this smooth floor is so great at some points that we crept on our hands and knees, and finally we had to leave the bed of the dry canyon and work along loose rock at the side, without any trail for a guide. My plan was to reach the backbone of some of the lower cliffs, and then crawl up on the ridge; but when I got so as to look through the "fins" on the backbone I was terrified at seeing the other side was a fearful steep cliff almost straight down 500 feet or more, and only sharp and needlelike spires of rock on the summit. By dint of crawling, careful climbing, and helping each other, we managed to get up at the very top of every thing, except a rock that looks like the crowning turret or dome, when the

mountain is seen about 50 miles away. We sat at the foot of this dome and looked up. From our position it looked like a whole and complete mountain; but from the valley it was only a sort of "knob" on top. I rather wanted to scale this too; but my companions said if we did we should have to stay up there all night, and we had no blankets, etc. I consoled myself by taking a nap for a few minutes, with the old rocky mountain for a pillow. The sun had warmed the rock so it was quite comfortable.

Then down we went. We essayed to take a shorter cut, but several times we were brought to a standstill by a precipice straight down, right in our path, and then we went back and tried another route. I slipped once and barked my shins; then I got a cactus, with its spines, into the other leg and in one arm. These cactus spines are barbed like a fish-hook. They go into the flesh very easily; but if you try to pull them out, "Ouch!" It is really worse than a bee-sting if you try to draw them out slowly. If you jerk them out quickly, however, it is much better; but each spine leaves an ugly wound. The ball of spines looks like a chestnut-burr, but they are larger. Twice the spines went clear through the leather of my boot, and pricked my feet. Jess sat down on one while sliding down the rocks. He said I shouldn't tell. Mr. Nippert stood the tramp better than either of us. We found many beautiful flowers on the mountain peak, never found in the valley below; and friend N. found an Italian bee clear on the top. The view from the top, of the valley below, and the mountains on the East piled peak upon peak, was grand. The little town where I am now writing looked like a small apiary of queen-rearing bee-hives.

This is a new mining town away off in the mountains. There are about 60 hands, and the stamping-mill runs day and night.* A very pretty little reading-room has just been put up, and it is here I am writing. I feel considerably bruised and sore from the severe exercise of the day; but my appetite is tremendous, and my digestion excellent; I am getting in training for my final expedition to the Grand Canyon of the Colorado, 280 miles distant over the mountains.

PURE DRINKING-WATER.

In New Orleans, in Beeville, and in San Antonio, Texas, the water I drank was more or less brackish, or alkaline; and even though I drank boiled water I had a metallic taste in my mouth, and began to feel a longing for rain water, which I could seldom get in traveling. Later I was troubled with painful eruptions all over my body. My brother, who is a druggist, suggested it was the change in drinking-water, and went to the Tempe ice-factory and got me some distilled water. I can't tell you how delicious it was. I drank it again and again. In 24 hours the bad taste in my mouth was gone, and in another day the eruptions began to disappear, and now they are all gone. A large canteen of this pure water was carried up the mountain, and it added to my comfort and enjoyment very materially. I do think rain water boiled, or distilled water, would of itself cure many of our troubles with poor health. On p. 752 we pictured an apparatus for producing

* Gold is mined here by sinking shafts and running out drifts, much as coal is mined in the East. The rock is then pounded up by a great stamping-mill. By means of water and quicksilver the gold is extracted. We found abandoned mines, holes of all sizes all over the valley and up the sides of the mountain. No one knows how much the stamping-mill is producing; for if it should get out that they had "struck it rich," everybody would be crowding around them.

distilled water at very little expense, and I fear not enough attention was given to a very valuable invention.

There, I have done a big day's work with muscle, and a pretty good evening's work in writing it up, and yet I feel tiptop.

Good-night, and may God bless you all, dear friends and readers of GLEANINGS.

OUR HOMES.

The Spirit of the Lord is upon me, because he hath anointed me to preach the gospel to the poor: he hath sent me to heal the broken-hearted, to preach deliverance to the captives, and recovering of sight to the blind, to set at liberty them that are bruised. —LUKE 4:18.

A bee-keeper asked me to take a ride with him. We were going quite a long trip, and I expressed fear that his light young pony might not be equal to the task. He said we would let her take her time, and he guessed she would make it all right. She seemed very docile and willing, but I noticed she was only partly "broke." She was rather poor in flesh, but he explained this by saying he had owned her only a short time. Our road was right along the track; and when a train came in sight we unhitched her, and my friend had quite a little tussle with her; but he held her so she could face the danger, was very kind and gentle with her, and it was soon over. He calls her "Pet," and I soon found he and Pet were getting to understand each other better and better every day.

Pet's sad story was something like this: Her owner happened to want a horse when she was about three years old. Because she didn't seem to understand, and wouldn't pull on a heavy load the very first day she was put into a harness, he whipped, pounded, and clubbed her, until there was almost nothing left of the poor little colt. She came of highbred stock, especially for *speed*, and not for heavy work; and so when her master didn't succeed in getting her to pull he in disgust sold her, or what was left of the poor thing, for only \$12.50. My friend, who is a Christian man, found her at this stage, and gave \$20.00 for her. Bruised and bleeding, he (like a good Samaritan) took her home, won her little horse heart by treating her kindly, and she soon became a "pet" indeed. He bought a light, strong covered buggy, a neat little harness, and Pet soon showed her gratitude by just making the rig "spin" as she carried him back and forth between his apiaries. On our last trip, as he was hitching her up I noticed he had trouble in getting the crupper in place. When asked about it he replied:

"Why, Mr. Root, you surely have noticed how her back down near the crupper is caved in: well, this was done by a heavy blow with a club before I got her."

I had noticed this, and had wondered if it was a result of the pounding. But, notwithstanding, pet seemed in a hurry to get started, and she carried us two men almost 50 miles in a day, and seemed as bright and fresh, almost, during the last mile as she did the first. The whip was never used once, to make her go, and she never once slackened into a walk unless her master made her do so. During the week or more that I knew her she had picked up amazingly, although it seemed as if a large doublehandful of oats was about all she required at a feed. ☐

Does your heart boil with indignation as you read this little story? I know of at least one

little *woman* whose mild gray eyes (ordinarily mild) will fairly blaze as she reads this; and sometimes they blaze to good purpose, too, in behalf of the bruised and pounded horses. What is the remedy, friends? We have a Humane Society, I know, and it is doing a grand work; but the greatest work is to be done along the line of our text in "setting at liberty them that are bruised." We want more "good Samaritans;" but, above all, we want the horse-men and the horse-owners converted to the Lord Jesus Christ, then we change the hearts of these fiends in human form, and thus bring "deliverance to the captives" for both man and beast.

Not very long ago, in a town of 10,000 inhabitants the Salvation Army was holding meetings. While they were singing "Is your name written there?" one of the workers noticed a young woman in the audience, looking very serious. In a gentle voice some one said to her: "Dear sister, would you not like to have your name written there?"

"She did not reply, but burst into tears." When further pressed she replied:

"Oh if it were only *possible*! but it can never, *never* be written there," and then she sobbed again convulsively.

Reader, what do you suppose those Salvation Army workers brought to light that night before they were done? Something like this: Some years ago, when this girl was only a child of about 14, having no home she went to keep house for a relative, a man grown. This person (*not a man*) set to work to *rob* the child, whom he was expected to protect. To rob her of her *money*? Bless your heart, she had no money, and that is why she was obliged to work out. She was too young to work for strangers, and so she was to have a home with a relative. Besides, this relative belonged to some kind of a religious organization—at least, I think he did; but those who knew him best were aware that he was a bitter skeptic. He was one of that hard sarcastic kind who call all Christians hypocrites. Why, I have seen so much of this in my life that I have begun to think that, if I were living a life of daily *crime*, I wouldn't talk against Christians and the Bible, for fear folks would suspect something. Before that girl left the meeting she made a full confession, accepted Christ Jesus and him only, and started out on the new life, bearing a cross that few of us can even comprehend. Let us see: She had by this act cut off every friend she had in the world, unless it was the Salvation Army people she had just become acquainted with. She was keeping company with a good young man, but of course *he* would drop her at once and for ever. Well could she say in the words of that grand old hymn:

Jesus, I my cross have taken,
All to leave and follow thee;
Naked, poor, despised, forsaken,
Thou, henceforth, my all shall be.

Her new friends found her a home, and she has ever since lived a consistent Christian, so I am informed. She lost friends and station in society. The great world turned against her. No, no! Not the *Christian* world. *God forbid!* On the other hand, her load of guilt and sin was gone. That burden she had borne for so many years in silence was lifted, and the love of Christ Jesus shone into her hungry soul. Now her name *could* be "written there." Oh glorious thought! Under similar conditions the dear Savior had said, "Her sins, which are many, are forgiven."

Let me use again the closing words of a well-known hymn:

He looked on that lost one, "her sins are forgiven." And the sinner went forth in the beauty of heaven.

Just a few thoughts in closing. The Salvation Army are noted the world over for just this kind of work. Dear reader, if you have ever spoken ill of them, don't do it again. Are you a follower of Christ Jesus? are you a member of any church? then stir yourself, as in the language of the text. Look after the horses, and make yourself felt in your community. But don't stop there. Look after the fatherless and motherless girls. I am sure there is need of it. Within the past year, two cases such as I have mentioned have come to my notice, more than a thousand miles apart. Do you say there is a law? Yes, there is; both cases were up in court. In one the gray-headed sinner got clear, so people said, because he had lots of money, and the poor girl had none. In the other, he paid the girl some of his money, and is supporting her child. In the latter, my advice was asked about keeping the girl after the facts of her former history came out. I simply asked: "Is she doing her work well? is she faithful and efficient?"

"Oh, yes! she is the best help I ever had. This thing happened years ago, when she was a child. There has never been a breath of reproach against her since."

"Then keep her, *by all means*. Give her all the help and encouragement possible. When Christ Jesus has forgiven, it ill becomes any of us to judge or condemn."

Now, then, let us all help on the work of "healing the broken-hearted," "deliverance to the captives," and giving "liberty to them that are bruised."

CHILD-TRAINING.

[The subjoined paper bearing the foregoing title was read originally at the Congregational Conference at Mallet Creek, of this county. As there was a general desire to have it given again, it was read before the Parents' Meeting of this place, which meeting I had the pleasure of attending. I decided in my own mind that it ought to be heard by a much larger circle of readers, and at the close of the meeting requested that I might have it for publication. I had scarcely made this request before there was a general expression on every side to have it put in pamphlet form, as nearly all of the auditors had friends whom they wished to read it.

Miss Smith is superintendent of the primary department of our Medina public schools, for which position, by her beautiful Christian spirit, her special training, and long experience, she is exceptionally well fitted. I wish she might be heard by every mother and father in this land; and those who feel as I do about it I hope will see that it is distributed among friends. After this journal it will be put in the form of a neat little booklet, at a price just above cost; viz., 2 cts. per single copy; 17c for 10, or \$1.50 per 100, all postpaid. At 2c we will send single copies to any address given in this country. Every family ought to have one, and I hope our Christian readers will help scatter it. Remember that the time to train a man, and so cover a multitude of sins, is when he is a child.

N. B.—We shall have room to publish only half of the paper in this issue, and it will, therefore, be concluded in our next.—Ed.

CHILD-TRAINING.

□ What is a child? and how shall he be trained? are two of the most important questions that can be asked. "What is this lump of flesh, breathing life, and singing the song of immor-

tality?" If we could answer this question perfectly we might say to the child as Tennyson said to the little flower plucked out of the crannies:

Little flower, if I could understand
What you are, root and all,
I should know what God and man are.

Patterson Du Bois, in "Beckonings from Little Hands," says of his four-year-old boy, "I would not have hurt him for the world, but I did not know what a child was, and consequently could not shield him from myself." Think of it, parents and teachers, helpless childhood wholly dependent for guidance and protection upon those who, like this father, do not know what a child is, either mentally, physically, or spiritually, consequently can not shield him from their ignorance, biased judgments, and moral deformities.

I often marvel at God's confidence in human nature as shown by the responsibilities he has placed upon us. I can imagine the angels in heaven demurring at his conferring free moral agency upon frail, sinful man, saying, "It will never do. Man with his selfishness and downward tendencies will wreck the moral universe if given the power of choice." But I marvel more that he trusts sweet innocent childhood to the care of weak blundering humanity. It must be for our sakes, that this responsibility may stimulate us to our highest and best; that the father, feeling his need of divine help in bringing up his family rightly, may himself be led to the Strong for strength, and to the Wise for wisdom; that the mother, desiring for her children the privilege of prayer, may herself first call upon the name of the Lord.

What is it to train a child? I was glad to find that Webster bears me out in saying that it is not thwarting, breaking, scolding, or subduing, as many seem to imagine, but guiding, leading, drawing, and directing. It is to form by practice. There is a good deal of so-called training which is only repression. Training develops, strengthens, and builds up. Repression weakens, discourages, and stupefies or hardens, and makes the child rebellious and deceitful. If, instead of "Johnny, sit still," and "Johnny, don't tease the cat," and "Johnny, you make me nervous," you would only find something that Johnny might do, how happy he would be, and what a relief it would be to your tired nerves! If you knew what a child is you would know that every muscle in the little body aches to be on the move, and every nerve tingles with life and energy, and that it is your work to direct these into right channels, not repress them. It is the empty hands, heads, and hearts that go astray. It was the empty house swept and garnished, you remember, into which the seven wicked spirits entered. If we will only occupy hands, heads, and hearts with the good and the true, we need to concern ourselves very little with the bad and false. For example, if a child is inclined to be cruel to birds or other animals, instead of talking to him so much about his cruelty, endeavor, as you have opportunity, to interest him in the many curious habits of animals, the building of their nests and homes, and the devotion of the mother to her young. Picture to him the life of constant fear and danger that these timid creatures live, never safe, always alert. Call his attention to the provision made by our heavenly Father for their safety. Tell him of the preparation made by the wild animals for winter, reminding him that no such preparation is needed for the domestic animals, as they have been entrusted to our care. With suitable stories lead him to sympathize with them in their suffering when robbed of their young, or

otherwise mistreated, and teach him that it is the privilege of the strong to protect the weak. Sometimes our "don'ts" suggest to the child the very course we wish him to avoid, and which but for us he would never think of. No doubt many a poor fly has lost his legs and wings because some child had been repeatedly told that was a thing he must never do. "The thought is the first step in every act. Every thought has a tendency to repeat itself. Every repetition of the thought strengthens the desire for action. Hence to suggest the thought of a wrong deed is to sow the seed of a wrong action."

Another danger of "don'ts" is that they antagonize the child, and prepare the way for a spirit of opposition and rebellion. Mrs. Hannah Whitall Smith tells of a little boy who said to his playmate, "Let us cut ourselves with this knife." When asked why he wanted to do that he said, "Because mother told me not to!"

Judicious praise is a great help in child-training. Commendation of a generous deed will incite to greater generosity than a whole book on the meanness of selfishness. A bad person may fill us with disgust, but only a good one can inspire us with noble purposes and high aims. Nothing can save like high ideals. That is what God gave us Christ for.

Nor must we forget that character is formed by *practice*. There is positively no other way. Every time we succeed in getting a child to make a right choice, or voluntarily do the right thing, we strengthen the upward tendencies of that life, and make it stronger to resist the next temptation. It is as true in the moral world as in the physical, that exercise strengthens and neglect weakens. It should be our care to strengthen the good by exercise, and weaken the bad by neglect.

Much valuable time is usually lost before the work of training the child begins, because parents do not realize the strength of habits and the rapidity with which they are formed. I know a child who is being allowed to become confirmed in a disagreeable trait because the mother is hoping the child will grow ashamed of it as she grows older, and correct it herself. She may, but it will be at the cost of much mortification and loss. Too many wait till the fair garden is well covered with weeds, then attempt to pull these up and sow good seed. The results from this course are so meager that such soon grow weary, and then ease their conscience with such old saws as "Theories are all right until you attempt to reduce them to practice;" or, "What is bred in the bone stays long in the flesh;" or, "The child is just like his father's folks; it's no use to try to do any thing with him;" or, "He's no worse than other boys. Boys will be boys;" and then with a pious resignation that the Lord never asks for, they pray instead of working, and trust God to do that which he has given them to do.

Many fail to accomplish all they might in this work for the child because only half believing in the possibilities of child-training. According to your faith and skillful persistence will it be unto you, and your persistence will depend upon the measure of your faith.

I was trying at one time to teach a left-handed pupil to use the right hand; and as it was an especially difficult case I asked an older brother if he would not help me by taking some pains at home to teach his little sister to use her right hand. He cheerfully consented, but came the next morning to tell me that it was no use to try to do any thing about it, for he tried a whole hour the evening before, and she was just as left-handed as ever. While some, like this boy, lack persistence, others are too

much inclined to bow to heredity, thinking if a child inherits a bad trait nothing can be done about it. But heredity is not like the laws of the Medes and Persians. It can be changed. Heredity is a powerful factor in any life, and should be considered; but I am convinced that environment and training are much stronger forces. We are born with tendencies only, not cast-iron bands or molds. The very ignorance and helplessness of each new life is a pledge of opportunity to advance in spite of all that has gone before. When horses, dogs, and monkeys are being trained, shall we leave the child ren to simply grow up? Notice the results from physical training—chest are developed, muscles strengthened, stiffened joints made supple, and the whole carriage changed from awkwardness to grace and ease by a few minutes' daily practice of correct rules; and one of the delights of the teacher is to see dull eyes brighten with intelligence, stupid faces grow thoughtful, and dull minds quicken by simple adherence to the here-a-little-and-there-a-little method kept up day after day, week in and week out. I know character may be changed by this same method, for I have seen the quarrelsome grow peaceable, the quick-tempered gain self-control, the impatient become patient, the impudent grow respectful, and the careless and inattentive grow studious by persistent, skillful, loving management. O fathers and mothers! how I wish you might all realize what a wonderful opportunity you have when God places a little child in your midst, and says, "Train this child for me"! It might well humiliate you to the dust with a sense of your unworthiness, and raise you to the skies with a sense of the high honor conferred upon you. It should send you to God in prayer, and lead you to scrutinize your life and practices as never before. Notwithstanding, how often this sacred experience is treated as a joke, or a matter of family pride and ambition, and the child regarded more as an object of pleasure to parents and family friends than as a new life to be molded for eternity. The work that might engage the powers of an angel is undertaken unhesitatingly by the thoughtless and ignorant. Herbert Spencer says, "Is the unfolding of the human being so simple a process that any one may superintend and regulate it with no preparation whatever?"

Mrs. A. M. Diaz, in "Domestic Problems," supposes a philosopher in disguise on a tour of observation from some distant isle or planet to visit us. Among the objects that attract his attention are the little children drawn along in their carriages.

"Are these beautiful creatures of any value?" he asks of a bystander.

"Certainly; they are the hope of the country. They will grow up into men and women who will take our places."

"I suppose there is no danger of their growing up any other than the right kind of men and women, such as your country needs?"

"On the contrary, there is every danger. Evil influences surround them from their birth. These beautiful creatures have in them possibilities of becoming mean, base, corrupt, treacherous, deceitful, cruel, false, revengeful; of becoming, in fact, unworthy and repulsive in many ways. Why, all our criminals, our drunkards, liars, thieves, burglars, murderers, were once innocent little children like these."

"And whether these will become like those, or not, depends on chance?"

"Oh, no! It depends largely on training. Children are like wax to receive impressions, like marble to retain them."

"But who among you dare make these early impressions which are so enduring?"

"Oh! the mothers always have the care of the children. That is their mission—the chief duty of their lives."

"But how judicious, how comprehensive, must be the course of education which will fit a person for such an office!"

"Do you think so? Hem! Well, it is not generally considered that a woman who is going to marry and settle down to family life needs much education."

Our philosopher next questions a young mother:

"Where were you prepared for the duties of your mission?"

"I had no preparation."

"But are you acquainted with the different temperaments a child may have, and the different combinations of them? Are you competent to the direction and culture of the intellectual and moral nature? Have you thus, uninstructed, the power, the knowledge, the wisdom, requisite for guiding that mighty force, a child's soul?"

"Alas! there is hardly a day that I do not feel my ignorance on all these points."

"Are there no sources from which knowledge can be obtained? There must be books written on these subjects."

"Oh, yes! but I have no time to read them."

"Do not husbands provide their wives with books and other means of information on this subject?"

"Generally speaking they do nothing of the kind."

"But," adds the writer, "if our philosopher continued his inquiries into the manners and customs of our country he must have felt greatly encouraged; for he would have found that it is only in this one direction that we show such blindness and stupidity. He would have found that, in every other occupation, we demand preparation. The individual who builds our ships, cuts our coats, manufactures our watches, superintends our machinery, takes charge of our cattle, our trees, our flowers, must know how, must have been especially prepared for his calling. It is only character-molding, only shaping the destinies of immortal beings, for which we demand neither preparation nor a knowledge of the business. It is only of our children that we are resigned to lose nearly one-fourth by death, owing to ignorance and injudicious nursery management."

But the loss by death is the smallest part of it. Think of the multitudes mentally crippled and morally warped because of the lack of knowledge of those to whom they have been entrusted! The farmer, stockman, dentist, physician, each has his professional paper. The teacher expects to read and study the subjects pertaining to her work constantly; but how few parents take a paper or buy a book on the subject of child-training!

But all lack in child-training is not due to ignorance and lack of preparation. We do not do as well as we know. I once overheard a man on the train say, "I know how to bring up children." I hastily thought, "Oh! no doubt you are the man, and wisdom shall die with you!" But I listened attentively for his next remark. It was this: "Let parents be themselves what they desire their children to be." And I thought, "Amen!" It is not precepts children need so much as example. Every child is born with a God given passion for imitation, and copies not only your actions and words, but your very spirit, long before he is six years old. It is possible for you in some unguarded moment to undo the verbal teaching of years. A little child was once heard to pray, "O Lord, make us very stylish." Do you not see the spirit of that home in spite of the re-

ligious teaching? Listen to another mother as she is getting the children ready for Sunday-school. "Have you got your Bible, Mary? I wish your father hadn't got your new shoes a mile too big. Can you say your golden text, Susan? Here's your hat. Be careful of it. It is the prettiest hat in the whole Sunday-school. I wonder if Mrs. Jones will let Ella wear that same hat another season. Now, John, behave yourself in church, and mind what the minister says. I suppose I ought to go with you to keep you straight, but I am too tired to go to church to-day. I worked too hard yesterday."

Do you want to know what she did yesterday? She made onion pickles, chili sauce, and ginger-snaps in the morning (she calls this feeding the hungry); in the afternoon she put five rows of inserting in Mary's new dress, tucked Susan's skirt, and ruffled an apron (this she calls clothing the naked). In the evening she attended a card party (this might possibly be called visiting the sick, as most of them were too sick to attend church the next day). How much moral weight will her Sunday words carry? Not so much as the down on one little thistle seed.

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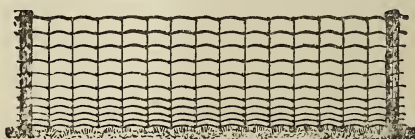
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